THE NO.1 MAGAZINE FOR THE COMMODORE 64

YOUR 64
& VIC 20

FEBRUARY 1985

95p No.6



EXCLUSIVE

MUSIC MAKER

The Stick On Synthesiser

PLUS/4 & C-16

ON THE BENCH

Commodore's Babies

EDUCATION

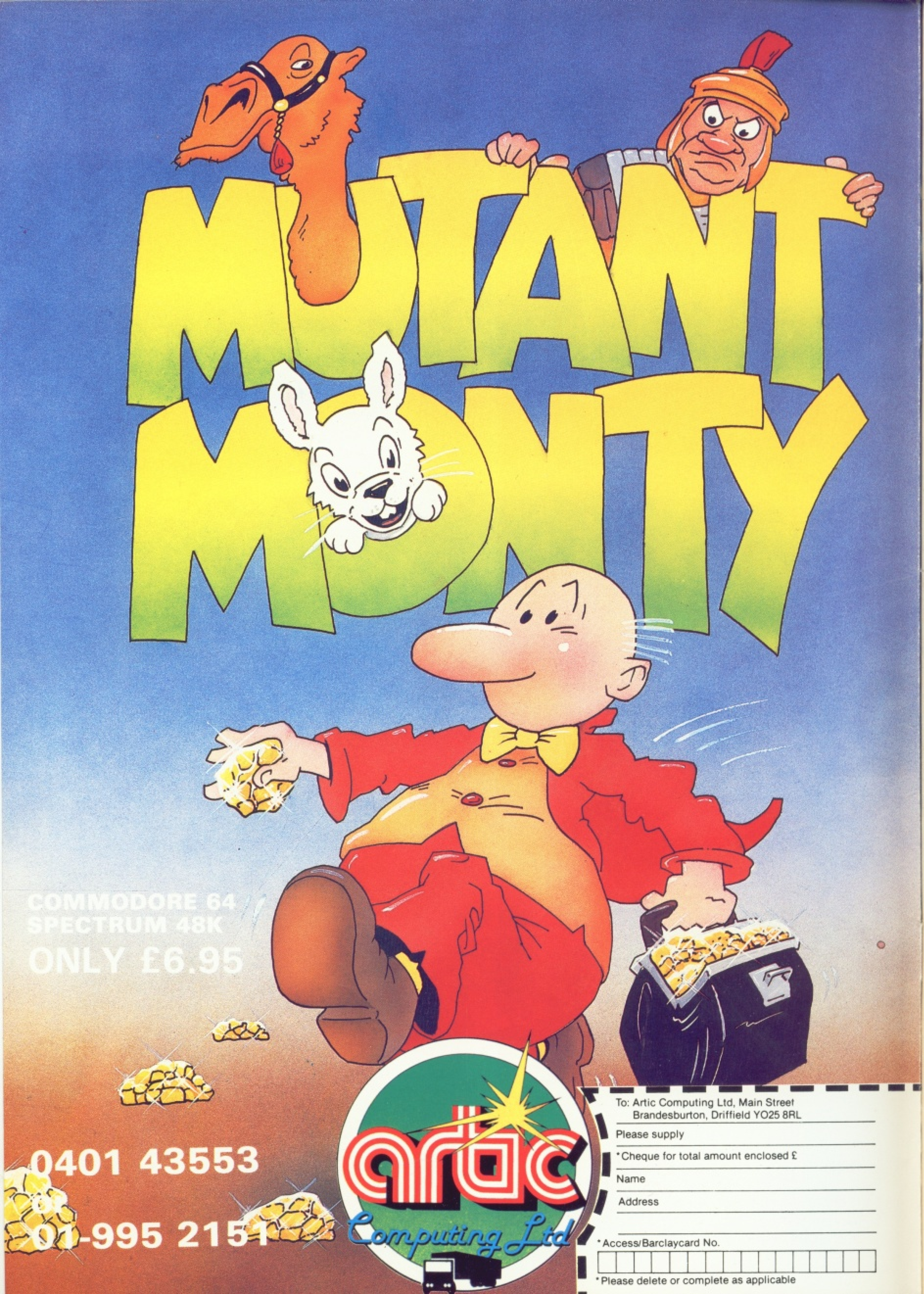
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Y64 MENU

THANKS
Y64 wishes to thank Commodore Business Machines (UK) Ltd; 'Tomorrow's World Today' (of Oxford Street); 'Pilot Software City' (of Rathbone Place); Osborne UK Ltd.

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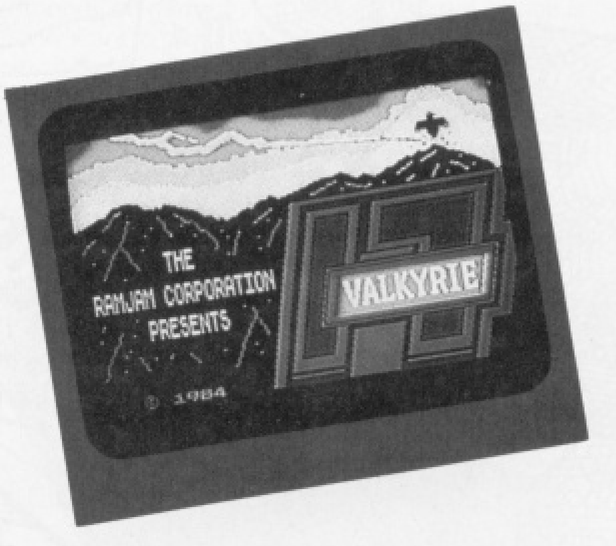
Downgrade your 64(!), meet the alpine valkyries, the great Compu-Micronet debate, rent-a-game, dial-a-newsflash, the all-purpose plotter — look no further for the newest news.

The Imagine Software Saga Continues

Just when you thought you'd heard the last of Imagine ... the name lives on!

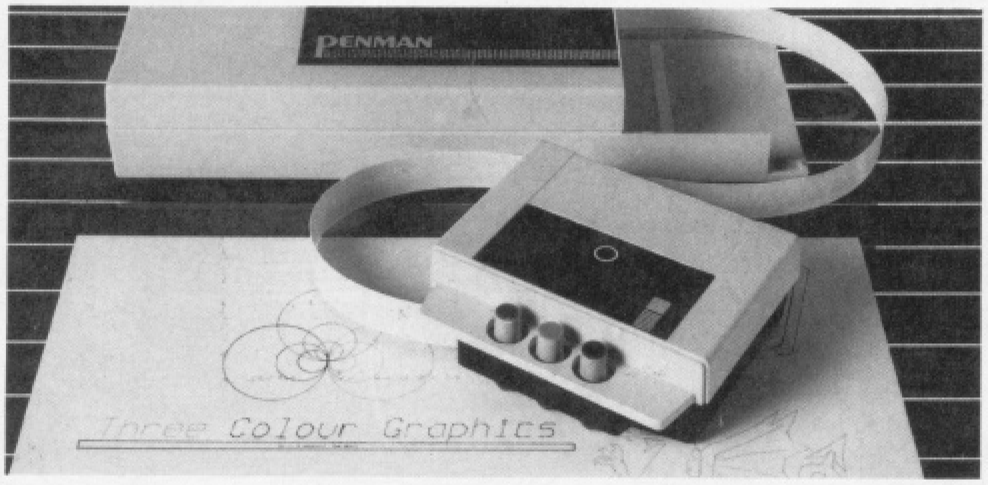
Ocean Software has bought the right to use the Imagine name and logo, and has contracted eight ex-Imagine programmers to complete programs they were developing for Imagine. Two of these — John Gibson and Ian Wetherburn — are known to have been working on Imagine's long-awaited but never released MegaGames. Ocean has also bought several completed Imagine games which were never released.

Ocean was unable to comment on its plans at the time of writing, but watch this space. Ocean is on 061-832 6633.



New from Palace Software, the software house that brought you *The Evil Dead,* comes *Valkyrie 17* — a "slightly paranoid adventure" set in an alpine resort.

The aim of the game, written by someone or something called the Ram Jam Corporation, is to thwart a bunch of ex-Nazis in their bid for world domination. Along with the game itself, you get a series of answerphone messages on the reverse of the tape and a dossier of information. The release date and retail price are not known at the time of writing, but it's expected to be available by the time you read this. Check with Palace on 01-278 0751.



Whata lotta plotter!

This versatile little beast is a combination turtle, plotter and mouse. It can plot lines in three colours down to letters 1mm high, sense obstacles in its path and read bar codes! It uses any size of paper (subject to the 1m ribbon cable that connects it to the 64) and accepts standard Pentel pens.

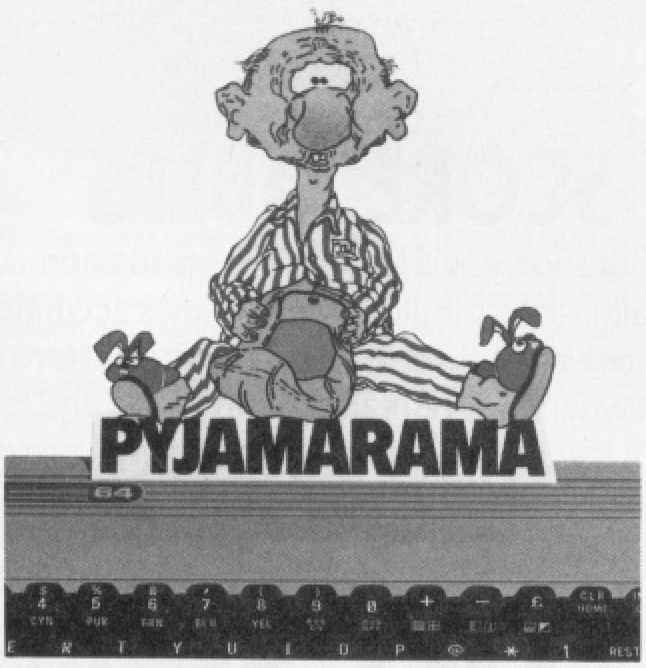
The Penman Plotter is remarkably "intelligent". It automatically adjusts its baud rate to suit the computer, can tell when it's got tangled up in its own cable and untangle itself, and will automatically locate the bottom left hand corner of a piece of paper ready to start drawing.

The Penman Plotter will retail at £249. The 64 software isn't ready at the time of writing, but check with Penman on 0903-209081.

New Help line Number

Please note that the *Y64 Helpline* phone number has been changed to 01-636 3513. We're sorry for any inconvenience — British Telecom managed to get our helpline mixed up with *Your Spectrum*'s!

Helpline is a technical help and advice service open exclusively to *Y64* readers. The line is open on Tuesday and Thursday afternoons between 2pm and 5pm; *please do not call outside these times!*



The editor of Yore Kommodore? Commodore's managing director? An Oric owner? No, the cardboard gentleman in question is actually Wally Week, hero of Mikro-Gen's *Pyjamarama*. The game has just been released for the 64 at £7.95. Ask Wally for more info on 0344-427317.

Compunet And Micronet Battle It Out

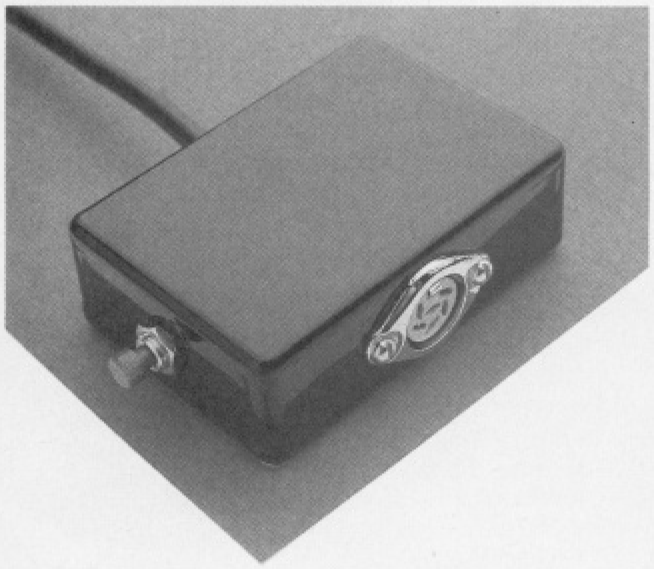
The battle between Compunet and Micronet 800 for supremacy among 64 users has begun in earnest, the press releases coming thick and fast.

Compunet lead the way by offering free viewdata software and offering Compunet users access to Prestel for a fiver. Micronet responded by pointing out that only its software enabled users to download Micronet software. "Ah, yes," said Compunet, "but Compunet users can download free direct 64-to-64 software." "That's nothing," retorted Micronet. "We offer a free demonstration system which people can try out before they register." "Trivia!" replied Compunet. "What about our on-line art competitions?" "Huh!" said Micronet. "Just you wait until you see our Channel 4 advertising campaign.." And so it goes on. All highly entertaining.



Watch out for *Y64*s Compunet versus Micronet review next month, but in the meantime you can communicate with Micronet on 01-278 3143 and Compunet on 01-637 0942.





For those of you who are too lazy to build the reset switch described in issue 1 (page 57), A S Denby will sell you a neat boxed one for £7 including P&P. As well as providing a reset facility, the box also allows you to save a program to a second tape recorder as you load it from your datasette. Details on 0789-763502.

British Telecom Makes Micros Make Money

British Telecom is trying out a dial-up information service for micro users. The *Home Computer Line* is a three-minute recording of micro news, changed twice a week to keep it up to date. The trial ends in March, and BT will then decide whether or not to continue the service.

You can ring the *Home Computer Line* anytime on 0274-722622.



The cheapest 64 modem we've seen to date is the £49.50 Intelnet 2046. It operates at 300-baud, making it suitable for bulletin boards and electronic mail systems but not Compunet and Micronet, and is switchable between originate/answer and full/half duplex. The non-approved modem is supplied with free dumb terminal software for 64 and VIC-20. Details from Intelnet on 01-689 9947.

Turn Your 64 Into A 35k Spectrum?

That's the proud invitation Whitby Computers is making with its *ZX Spectrum Simulator!* Yes, for just £14.95, you too can turn your £200 CBM 64 with sprites, three sound channels and hi-res graphics into a £125 spriteless, beeping Speccy. You don't really want to know that Whitby is on 0947-604966, do you?

Video Shops Rent Wild Dreams

New software house Wildest Dreams won't allow you to buy its software. Instead, you'll be able to rent its programs from video shops for around 50p per game per night. That way, says managing director Chris Kilburn, you don't have to waste your money on games you only want to play once.

The thing is, Chris, since we can't buy your software even if we wanted to, are we to assume it's so bad we would only *want* to play it once? Find out if once is enough on 0203-663085.

They Se-Kaa Here, They Se-Kaa There ...

Master Adventurer is a new games label from Mastertronic, which plans to use it to produce cut-price adventure programs. The first product under the Master Adventurer banner is Se-Kaa of Assiah priced at £2.99. You are Se-Kaa, your task is to free the world from the evil influence of a mutant race known as the Dark Hordes, and reinstate the Wise Ones who ruled in former, happier times. The idea, of course, is to find lost artefacts to enable the Wise Ones to regain their lost powers and thus defeat the Dark Hordes.

Master Adventurer will be buying original programs from individuals as well as from other software houses for release worldwide, as well as preparing its own.

Find your way to a phone to call Mastertronic on 01-402 3316.



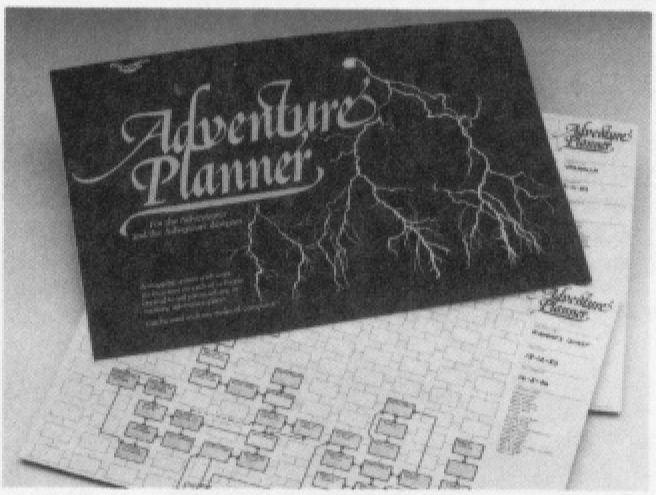
The latest releases from CBS Electronics. *Breakdance* is as bad as the name suggests, the others are better and *Mission Impossible* is excellent. Details from CBS on 0734-698188.

Eureka!

Latest in the line of software companies seeking to increase their turnover by dangling the now-familiar big prize money carrot before the noses of potential customers. The carrot in question amounts to £25,000 for the first person to solve the five-part 250K adventure. Look out for our review, but if you can't wait Domark is on 01-871 1136.



Datafax's SCP-800 is the first A4 printer-plotter to sell for under £200. With a resolution of 0.2mm, the plotter can draw in any of four colours using either 210mm roll or A4 sheet paper. More info on 0256-464187.



Essential Padding for Adventurers

Print 'n' Plotter Products never ceases to amaze me. The company made its name selling text and graphics design pads. These were basically just pads of graph paper selling at about a fiver a time. Its latest product is an Adventure Planner pad.

This again is nothing more than a pad with lots of boxes selling at £3.95 retail, £4.50 mail order. Adventure players mark each location in a box and draw lines to indicate the routes between the two. What amazes me is that, despite the ridiculous simplicity of Print 'n' Plotter's products, they are actually very useful. Order yours on 01-403 3622.



Audiogenic has announced four new games: Magic Stone **tells of a magic stone hidden in the Transylvanian mansion of the evil Graf von Schwarzherzen, which, if found, could turn out to be the alchemists' dream — transmuting lead into gold.**

In Time Traveller **you wake up from a deep sleep in the year 1990, alone on a spaceship somewhere in space. You must discover your identity and destiny, and restore the balance of time disturbed many centuries ago by the evil Graf von Schwarzherzen (see above). Magic Stone and Time Traveller are both £5.95 on cassette, and Audiogenic will be awarding a Koala Pad to each of the first three entrants to solve each adventure in the shortest possible way. Then join Alice in her journey through Videoland — the land of bread-and-butterflies and pipe-smoking caterpillars or, if you prefer, steer Freddie up and down ladders, picking up pots of gold.**

Frantic Freddie **and** Alice in Videoland **both retail at £8.95 (cassette) and £12.95 (disk). If you want to know more, ask Audiogenic on 0734-664646.**

SOFT STACK

EDUCATION

CRL has released a 64 version of the **Highway Code** which is the first program to receive the AA seal of approval. The program consists of over a hundred questions, all of which can be found in the book produced by HMSO. The user is given a percentage for his/her test choice, either the 25 or the 10 question test. Graphics include representations of road signs and traffic situations. The Highway Code retails at £5.95. Further information on 01-481 3333.

Time-Trucker is an educational program designed to teach 8-14 year olds the relationship between the 12 hour analogue and the 24 hour digital clock. The child has to drive a lorry to and from a depot within a certain time limit while overcoming obstacles such as road repairs and the like. The idea, says ASK, is to compel the child to remain alert by teaching everyday navigation skills. Time-Trucker has 3 levels and is supplied on cassette at £7.95. Details from ASK on 01-874 6040.

An educational series from Richard Shepherd Software. The first two programs, **Shape School** and **Shape Station** teach shapes and colours. A family of shapes, including Tracey Triangle and Ollie Oval offer encouragement by waving and dancing when a correct answer is entered. If a wrong answer is submitted Robbie Robot offers advice. Shape School and Shape Station are designed to help parents guide their children whilst encouraging the child to use the computer keyboard at a simple level. Prices are £8.95 (tape) and £11.95 (disk). Richard Shepherd Software is on 06286 63531.

Should your addition, subtraction, multiplication and division not be what it should, try Avalon's **Basic Maths** which has four levels of difficulty and costs £7.95.

SPREADSHEETS

Kuma has released **Spreadsheet Calculator** for the 64. It's the completion of the series of database and simple accounts programs already on the market. The Spreadsheet has 26 columns by 50 rows. Features include deletion and movement of rows and columns, and all the data can be displayed in currency format. The program is supplied on cassette and comes complete with introductory manual at £14.99. Details of the complete range from Kuma on 07357 4335.

Micro Swift is a spreadsheet written by the author of Magpie, using pop-up menus to control the various facilities which include split screen and variable cell widths. Four household applications are included as standard. Micro Swift is supplied on both disk and tape and is written in 100% machine code.

DATABASE

The **Micro Magpie Database** is a development of Magpie but retains all the advanced features and improves on some. Micro Magpie comes complete with free mailing list and stock control applications and a professionally written manual, and is only available on disk, at £39.95.

The Address Book from Avalon can store 80 files before downloading to disk or tape. It has dual search facilities, alphanumeric sort, dual printing options, label and data printing. Available on tape at £11.25.

Also from Avalon is the **Video/Film Catalogue** intended for the rental retailer, which keeps track of date of purchase/hire, cost and takings to date with an instant read-out for films due to be returned on a particular date. On tape at £11.25.

WORDPROCESSORS

Micro Wordcraft is virtually identical to its predecessor, the Wordcraft 40 cartridge, and contains all the usual features of a word processor, plus Help screens which you can call up to remind you of the commands and controls. Also only on disk, at £19.95.

Again from Avalon comes **Super Writer**, a menu driven wordprocessor with editing, variable tabulation and text justification. It will print on any printer and comes on tape and disk. Tapes retail at £11.25.

UTILITY

Soundscan generates special sound effects, (not to be confused with a music program, although it's just a matter of taste), saves all your noises as seperate data statements and is available from Avalon at £7.25. Find out more on 0458 33812.

The Flip Side Of Anirog Software

Good news for VIC owners intending to upgrade to a 64 are Anirog's Duo Tapes. The tapes, which include *Kong* and *Flight Path 737*, have the VIC version recorded on one side and the 64 version on the other. Thus VIC owners selling their VICs in order to buy a 64 will be able to continue playing their Anirog games simply by turning the tape over.

It's a pity that Anirog chose to launch the idea just as Commodore replaced the VIC with the C-16.

Seeing is believing

See the pack – see the screen – see the game. See the difference the moment you pick up one of the games from Firebird's new Silver Range.

The difference is that our packs show the high quality you'll see on the screen when you play, so you know exactly what you're buying.

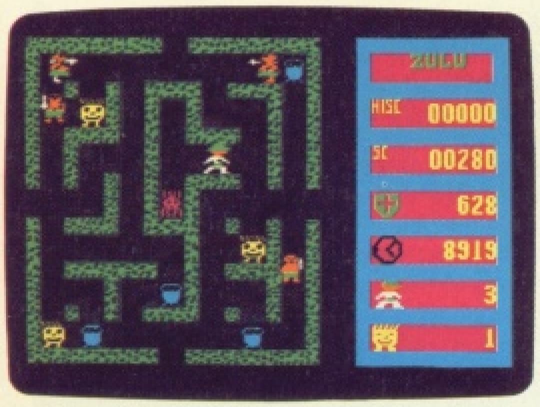
The same high standard applies to all twenty games in the range and all are available at the remarkably low price of

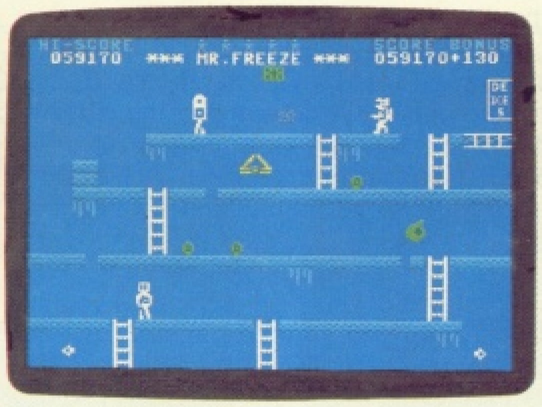
£2.50

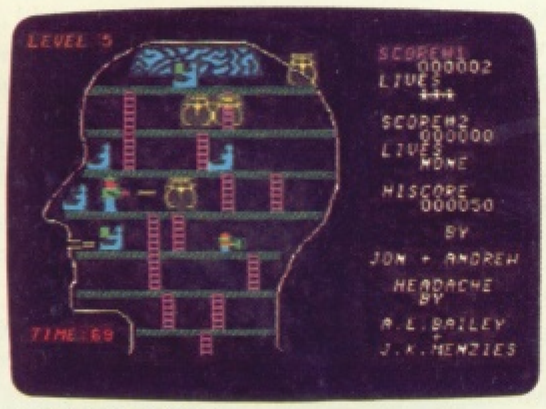
FIREBIRD

SOFTWARE

Here's a sneak look at three of the NEW games:







ZULU
100 golden masks hidden in an ancient maze, guarded by Zulu warriors and protected by tribal magic.

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Six freezer compartments to de-ice, each packed with chilling obstacles, and each tougher than the last.

HEADACHE
Nervous Ned versus Head Banger in a furious quest to carry messages to the brain.

Look out for these games in the FIREBIRD silver range at selected high street stores.

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Choosing the right computer is a good start — but can you find the right software?



At SUPERSOFT we're very conscious of the fact that people who spend several hundred pounds on computer equipment are looking to do rather more than play Space Invaders.

Financial planning is a rather grand name for something you've been doing all your life – making ends meet! Perhaps if Mr Micawber had used **BUSICALC** he would have been able to balance the books a little better.

For home, club or small business use BUSICALC 1 should pay for itself in no time at all; for larger companies we recommend BUSICALC 3, one of the few really valuable programs that you can learn to use in a day.

Although your Commodore 64 is a powerful musical instrument you need to be a pretty good programmer to understand how it all works. Unless, of course, you buy **MUSIC MASTER!**

To use MUSIC MASTER requires no prior musical knowledge, though in the hands of an experienced musician it will prove an invaluable tool. You don't need to know the first thing about programming either! MUSIC MASTER is the musical equivalent of a word processor, remembering the notes you play and allowing you to replay and edit them as you wish.

INTERDICTOR PILOT is a space flight simulator. Nowadays simulators are widely used to train pilots and astronauts because – to be frank – it's a lot cheaper (and safer) than the real thing!

Imagine, if you will, life in the 22nd century: space travel is commonplace, and on the outskirts of the galaxy the first war between civilizations is being fought. A shortage of trained pilots has prompted the Federation to develop a computer simulation that allows raw recruits to gain experience without paying for their mistakes with their lives. With the aid of your Commodore 64 you too can learn to pilot the Interdictor Mk 3 craft. But be warned – this is no game!

SUPERSOFT

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Telephone: 01-861 1166

Other SUPERSOFT products include the **MIKRO ASSEMBLER** cartridge, the only assembler that's ideal for beginners yet powerful enough for the professional (most of our competitors use it!). The **VICTREE** cartridge adds dozens of commands to Basic including toolkit aids and disk commands; or on disk there's **MASTER 64,** a comprehensive package for the keen programmer.

Of course, we do also publish games programs, and with classics like **STIX, QUINX** and **KAMI-KAZE** in our range we are one of the market leaders. But we most enjoy coming up with the sort of programs that are going to be in use for months and years, not hours and days – the sort of programs that make you glad that you bought a computer – and glad that you bought SUPERSOFT!

You won't find SUPERSOFT products on the shelves of your local supermarket. But most specialist shops stock titles from our extensive range (and are prepared to obtain other programs to order). However you can also buy direct by sending a cheque (pre-paid orders are post free!), by calling at our offices, or over the telephone using your ACCESS card.

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A man's home is his castle, but to you, Gandalf the Sorcerer, your castle is sacred. Or so you thought until the scalytailed lizardmen took a fancy to your treasure which is protected by an ancient spell.

Your castle is under seige. From the distant forest come waves of attacking slimy creatures, all bent on abducting your apprentices and holding them for ransom. If the lizardmen get all three apprentices, you must yeild to their greedy demands and release the spell on your treasure. You cast your power bolts, annihilating the attackers with a blast of fire, but still more come. Your magic power drains and you climb the tower to draw more from the shining star. But beware the deadly spider. If the lizardmen finally break down the castle door, you must battle them throughout the castle. And if they do kidnap your assistants, you must chase them through the woods before the creatures drag them, kicking and screaming, to Lizard Lair.

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for your 64

Computers, like people, are fallible. They need the right combination of code and care to perform effectively in the business or the home. And that requires first hand knowledge from you to create a healthy operating environment for your Commodore 64.

Knowledge about machine language, about the lesser known qualities of the 64, about the disc drives, graphics, and about the tricks and tips to keep your 64 on line. That's why First Publishing has now launched in the UK a series of high quality books and software packages to provide a complete health care kit for your 64. Commodore 64 users throughout Europe have already found it a tonic. We think you will, too.

For a brochure on all the Commodore 64 books and software packages available from First Publishing, please fill in the coupon and send to: Amanda York, First Publishing, Unit 20B, Horseshoe Road, Horseshoe Park, Pangbourne, Berkshire.

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Or ring *Amanda York* at (07357) 5244 or Calco Software at 01-546 7256 Y64/1

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Y64 welcomes correspondence on any and all aspects of computing a la 64. Funnies, straights, anguished pleas for help. 14 Rathbone Place, London W1P 1DE.

Meddle With Your Micro!

I have subscribed to your magazine since its first issue. Do you realise that yours is one of the few publications permitting the advertising of Backup programs? As long as you do *not* subscribe to the short-sighted, childish attitudes of your competitors I shall continue to subscribe to Y64. I know there are people out there copying away for what may be considered gain and that there are real out-and-out pirates, but I also realise, and so must they, that there is no effective method of stopping the practice. What appears to be happening is that the software houses are searching for the ultimate protection. I wish they'd realise that no matter how much they code program errored sectors onto disks, produce secondary directories and ID numbers and turbo tapes, someone, somewhere will break into it.

I read Mrs Maynard's letter with some amusement. Having just popped out of the cassetted, padded, compiled world of the oversized, overpriced, white elephant I'm sure she did find the 64 something of a let-down. The Nascom referred to I remember as being unusual, if only for the fact that it was principally constructed of fibre glass!

To a certain extent I sympathise with this lady's point of view. Given a choice I would program in Basic on my old VIC rather than my 64 (unless using Simon's Basic, etc.) but given a choice between a mainframe or mini and a 64, the 64 would get my vote every time. I use a Prime, and to anyone who uses a Commodore and is used to the wonderful editor, I would say look no further. The mainframe editor is almost as bad as the dreaded Spectrum or the corpulent BBC. The Cobol language used principally is like Terry Wogan or Crossroads: it never seems to end. The 64 does have a rotten Basic, but that is more than made up for by the editor and the Kernal. You do get the option with Commodore Kit, if a programmer is innovative enough there aren't many problems he can't circumvent, because the basic equipment is all there, it just needs you to get in there and get at it. Witness Tape Turbo Loaders, now Disk Turbo Loaders and, yes, even a software speech synthesiser, not a little black box... a program! Keep up the pioneering spirit, get into your ROM, interfere with the Kernal, mug the Zero page, meddle with your micro!

JL Masterman,
Middlesborough, Cleveland.

PS. Can anyone tell me if the dreaded Cobol is available for the 64, and, whilst I hold my breath for the blow, the price?

So far as I know, there is no version of Cobol available for the 64 and I can't see the demand for such a product being overwhelming, but perhaps someone out there knows better? Ed.

Pin Problems

I'm trying to fit an internal speaker to my 64 which will enable me to locate my programs on tape more easily. I have found that the signal from the CN2 cassette recorder can be directed to a speaker via pins 1 and 2 of the serial port. However, with a speaker connected, my programs will save correctly while giving out an audio signal, but will not load. They will load with the speaker disconnected.

David Robinson,
Rotherham.

The reason your programme will not load is that the SRQIN line of pin 1 of the serial bus is directly connected to the cassette read line. With the speaker connected this directly grounds the signal with pin 2. Very little, if any of the signal actually gets to the 6510 CIA.

The easiest way to locate programs is to use the VERIFY command. Connecting wires, unless you are sure what you are doing, is not recommended. Most of the BBC owners I know actually try to suppress the sound of tape operations, which can at best be described as painful to the ear.

However, if that's what you want then a company called ASHBY PRODUCTS, PO BOX 510, BIRMINGHAM, B17 9ES offers a device which will do the job. It is called REKORDAKIT 64 and retails for £5.95.

Bob Turner

Credibility Gap

"Will it never end?", I ask.
"What?" you inquire.
"This careless and ceaseless repetition of high software prices," I go on.

"Yes, you do go on," you say. "We get such letters by the sackful."

"But surely something must now be done," I continue. "For example, Quicksilva converted *Ant Attack* for the Commodore 64. The price for the Spectrum version is £6.95. The 64 version is a whole two quid dearer at £8.95! Even US Gold, who've given us so much good software, are doing the same. The 64 *Beach Head* game is £9.95; the Spectrum version is £7.95!"

Now that two quid difference could buy you Mastertronic's CHILLER, which, despite your comments (*Open Access*, issue 4), is brilliant!

Back to HSP. (High Software Prices), what justifies that extra two pounds? Don't come on with all that high development costs or that programming the 64 is more expensive, because the simple fact of the matter is that we are being ripped off! It is enough to make you a software pirate — I'm not, but I can understand those who are.

The Guild Of Software Houses are supposed to do this and that, but one thing should be done — all software should be £5.00, no matter what the machine or how much has been spent on advertising. Some, I admit, will be higher priced because of costs but why £7.95 for a Spectrum game and £9.95 for a revamped 64 version?

And though I really hate to mention it, how come in your first issue you said Durell had claimed its game *Scuba Dive* was terrible yet your staff voted it into your Choice Twenty?

Andy Clarke.
Baddesley Ensor,
Warwickshire.

Don't blame me — I wasn't editor then! If Quicksilva and US Gold want to explain their pricing policies through this page, they're quite welcome to do so. Ed.

Edited Highlights

I was reading your magazine (issue 4) today, and saw what I can only describe as a thick Jock (Mrs Nellie Maynard).

I am getting really sick of people knocking the 64. This person only had the 64 for a few days and has now decided to go back to Nascom. Well I for one hope she stays there, the only reason she couldn't use the 64 is because she's too thick to understand it. I have had my 64 for about 18 months now, and I've never had any trouble.

I'd like to see the Spectrum that Mrs Maynard was shown play music like the 64. Everyone's knocking the 64 so let's look at some other computers.

First of all the BBC, such a wonderful machine, Ha! £399 worth of machine ... £70 for the ROM chip, does Acorn really call that 32K a memory? Granted it's got a great Basic, but most software is in machine code.

Next is the Spectrum ... its users trying to find all the bugs in it ... Still, Spectrum could bring that out as a game what keyboard? what sound? Where can I plug my joystick in? Nowhere! ... upgrade a Spectrum to 64 ... joystick, disk drive, printer, keyboard ... interfaces ... would cost more than the price of a 64!

Next, the Acorn Electron. ... try plugging a joystick into that without an interface ... disk drive ... claims a printer. it has BBC Basic try running some BBC software on an Electron and see what happens.

Next the Oric ... ever tried to get a game to load from cassette ... keyboard's not much better than a Spectrum — boring.

I could go on about other computers like the Dragon ... Aquarius ... Tandy ... Ace ... and lots more ... people buy their machine because it will do what they want ... I bought my machine for its games, graphics, music ... look at 'Summer Games', 'Decathlon', or 'Beach Head' ... people all go on about the 64K the CBM hasn't got but ... flip out the 64's ROM to reveal RAM underneath at the same address.

So why don't they enjoy their machines and keep their mouths shut about a computer they know nothing about?

James R Strang
Droylsden, Manchester.

We had to edit this a little. Over to you, Nellie. Ed.

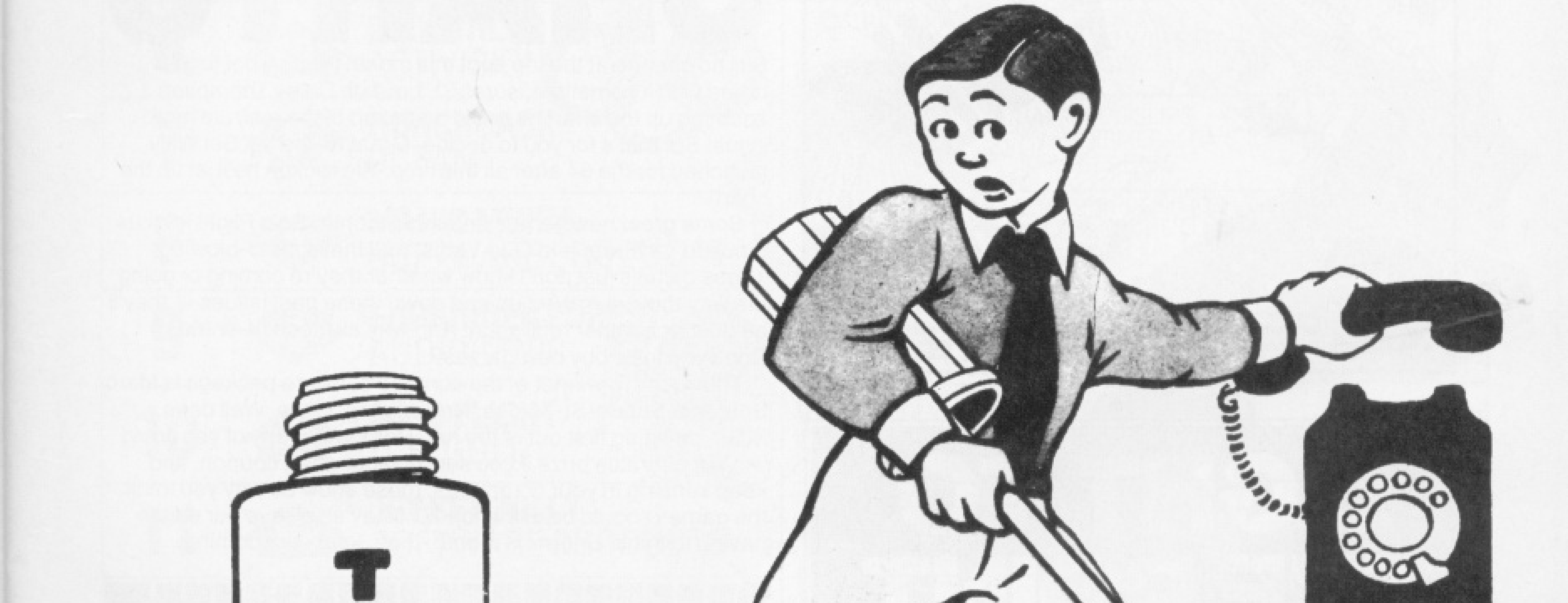
Commodore cop-out?

I must say that I totally agree with Mr Scot about the upgrade of the 64's Basic. Unfortunately I feel that if you approach Commodore about it all it will say is that you can buy Simon's Basic which will do the job.

G Wright
Kessingland, Suffolk.

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YOUR OWN CHOICE CHARTS

Still no change at the top spot this month (you've got to get bored with it sometime, *surely*?), but with Daley Thompson zooming up the chart he could be on top of the rostrum next issue! But that's for you to decide. Great to see Jet Set Willy launched for the 64 after all this time. We reckon he'll jet up the chart!

Some great new games enter this month. Solo Flight kept us amused for hours and Quo Vadis, well that's mind-blowing! Those camels just don't know whether they're coming or going the way they've moved up and down these past issues — they'll be due for another refill soon! And why all these re-entries? Don't you folks buy new games?

This month's winner of the surprise software package is Marc Souter of Sutton-St-James, Nr Spalding, Lincs. Well done, Marc, on being first out of the hat. Remember any of you could win our nifty little prize if you send in your chart coupon, and keep sending in your comments: these show us why you think the games should be in the top 20. They also save our editor having to think. Until next month, then, keep 'em coming.

YOUR 64 CHOICE TWENTY

your 64

My top five games for the **Commodore 64** are:

1 ______________________

2 ______________________

3 ______________________

4 ______________________

5 ______________________

Name ______________________

Address ______________________

____

____

All polling slips should be mailed to: **Your 64 Choice Twenty, 14 Rathbone Place, London W1P 1DE.** (By all means send a photocopy if you'd prefer not to harm the issue.)

YOUR 64's TOP TWENTY

THIS MONTH	LAST MONTH	TITLE	COMMENT
1	1	**INTERNATIONAL FOOTBALL** COMMODORE	STILL AT THE TOP OF THE DIVISION.
2	4 (up)	**THE HOBBIT** MELBOURNE HOUSE	WE'RE ALL IMPRESSED WITH BILBO'S STAMINA.
3	3	**BEACH HEAD** ACCESS	STILL BATTLING IT OUT AT NUMBER 3.
4	19 (up)	**DALEY THOMPSON'S DECATHLON** OCEAN	DALEY'S GOING FOR GOLD AGAIN!
5	7 (up)	**TALES OF THE ARABIAN KNIGHTS** INTERCEPTOR	SPEAKS FOR ITSELF! WONDER IF LAWRENCE HAS A COPY?
6	10 (up)	**DECATHLON** ACTIVISION	QUITE A SPORTY TOP 10 THIS MONTH — WHERE DO YOU GET ALL THE ENERGY?
7	6 (down)	**HUNCHBACK** OCEAN	QUASIMODO SLIPS AGAIN, AS ESMERALDA'S CHANCES FADE.
8	5 (down)	**MANIC MINER** SOFTWARE PRODUCTS	WILLY'S DROPPED FROM THE TOP 5, BUT HE'LL STRIKE BACK.
9	8 (down)	**FORBIDDEN FOREST** AUDIOGENIC	FED UP WITH THIS ONE ALREADY? (THAT'S FORBIDDEN!)
10	NEW	**SOLO FLIGHT** U.S. GOLD	RAPIDLY CLIMBING THE CHART.
11	NEW	**JET SET WILLY** SOFTWARE PRODUCTS	AT LAST! SPECCY OWNERS HAVE HAD JET SET FOR AGES.
12	11 (down)	**FOOTBALL MANAGER** ADDICTIVE GAMES	GETTING LESS ADDICTIVE ALL THE TIME.
13	14 (up)	**VALHALLA** LEGEND	NORSE-WARD BOUND! THIS COULD BECOME A SOFTWARE LEGEND
14	NEW	**QUO VADIS** THE EDGE	ANYONE FOUND THE SCEPTRE YET? HAS YOU GRIPPING THE EDGE OF YOUR JOYSTICK.
15	2 (down)	**REVENGE OF THE MUTANT CAMELS** COMMODORE	OH DEAR! LETS HOPE THE CAMELS DON'T TAKE THE HUMP!
16	NEW	**AZTEC CHALLENGE** U.S. GOLD	EXCELLENT SOUND AND GRAPHICS, NO WONDER IT'S BACK.
17	NEW	**SUPER PIPELINE** TASK SET	THIS ONE'S A BARREL OF FUN! (GLAD YOU THINK SO! ED).
18	16 (down)	**ZAXXON** U.S. GOLD	NOT EXACTLY FLYING HIGH — AND WHERE'S HAVOC?
19	NEW	**LORDS OF TIME** LEVEL 9	DESTINED FOR THE TOP? ONLY TIME WILL TELL!
20	NEW	**KRYSTALS OF ZONG** P.S.S.	ANOTHER RE-ENTRY, THIS TIME PAC-MAN STYLE.



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THE BACK ISSUE BUG

HAVE YOU GOT IT?

READING Y64 CAN DO STRANGE THINGS TO A PERSON . . .

THE PORTABLE 64 — Y64 GIVES IT THE IN-DEPTH REVIEW TREATMENT.



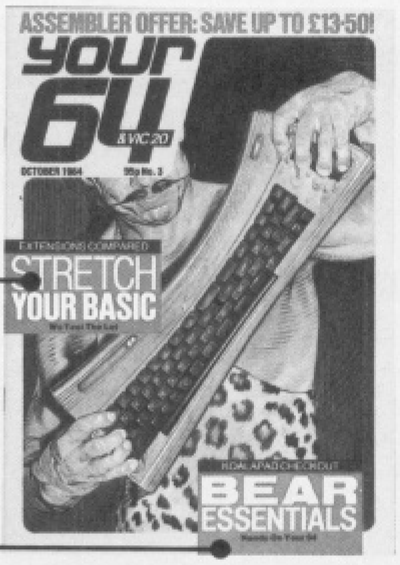
A HACKER'S GUIDE TO TACKLING JUMPMAN — COMPLETE WITH FULL-COLOUR SCREEN SHOTS.

DIY EXTENDED BASIC PACKAGE — ADDS NINE INVALUABLE KEYWORDS AND ALLOWS YOU TO DEFINE OTHERS.

ISSUE 1

COMPLETE COMPARATIVE REVIEW OF ALL THE CBM 64 EXTENDED BASICS.

CREATE NO LESS THAN 50 COLOURS ON YOUR 64!



THE KOALAPAD MAY BE EASY TO USE, BUT IS IT ART?

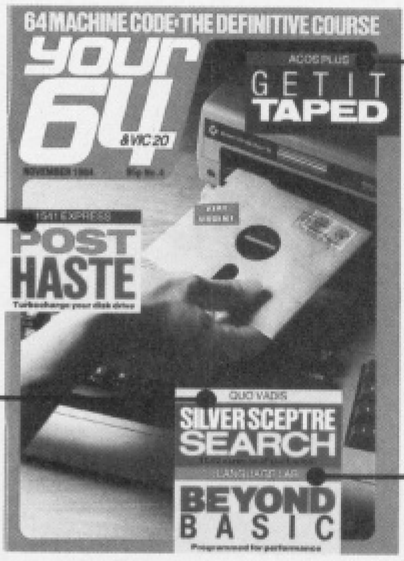
MUSIC ASSEMBLER — ENTER, EDIT AND PLAY MUSIC USING JUST A JOYSTICK AND FUNCTION KEYS!

ISSUE 3

STOP PRESS ISSUE 2 SOLD OUT!

A CARTRIDGE THAT SPEEDS UP YOUR DISK DRIVE? WE PUT IT TO THE TEST.

WE TRY OUT A HIGH-SPEED CASSETTE SYSTEM. IS IT AS FAST AS IT CLAIMS?



THE BIGGEST GAME OF THE SEASON — BUT DO 1012 SCREENS AND A SILVER SCEPTRE MAKE A GOOD GAME?

WE LOOK AT WHAT PASCAL, FORTH, PILOT AND COMAL CAN DO FOR YOUR PROGRAMMING.

ISSUE 4

WE EXPLAIN HOW A LIGHT PEN WORKS AND REVIEW THREE.

WE GIVE YOU THE LOWDOWN ON FIVE GRAPHIC ART PROGRAMS



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ARE ZAXYON AND HAVOC THE HIGH-FLYING GAMES THEY CLAIM TO BE?

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NEW VICS FOR OLD?

After much rumour and speculation, Commodore finally launched its two new home micros. But are either of them of interest to the 64 owner? Jim Lennox *examines the Plus 4,* Steve Malone *tries out the C-16.*

Commodore's two new home computers must make Commodore 64 and Vic 20 owners a little nervous. "Is my micro on the way out?" they ask. The answer for the Vic 20 owner is a definite "yes", the Commodore 16 has put paid to it. The Plus 4, though, is *not* a rival to the 64 — the machines are aimed at different markets, and Commodore is adamant both machines will sell alongside each other.

Plus 4

The Plus/4 shares features of both the 16 and the 64 and adds a few of its own. Internally it's similar to the 16, but has 64K of memory and its own rather stylish case and keyboard. Because of its similarity to the 16, the Plus/4 can use all its software.

There are three big differences between the two machines. Perhaps the most obvious is the new case and keyboard of the Plus/4. The keyboard is very light to the touch. Secondly the Plus/4 has a full 64K of memory. a huge 60K of this is left free for use by Basic. Even when graphics are used there is 50K left free. In contrast, a laughable 2K is free on the Commodore 16 when graphics are used.

The last big difference between the Plus/4 and the C16 are the four built in programs, a word processor, spreadsheet, database and graphics program.

All the features needed in a simple word processor, including search and replace, are found in the Plus/4 word processor. Yet the designer of this program seems to have paid little thought to making it easy to use. There's almost no attempt to show the text on screen as it will look on paper. It does not word-wrap on screen, but only when printing, so words are split between the end of one line and the start of the next. When text is deleted from the middle of a document, the rest of the text moves backwards throughout the whole document to fill the space. This destroys the start of paragraphs.

The program can print to different widths and can format text in different ways, but none of thisis seen on screen. The text is always shown as being 77 columns wide. Yet the Plus/4 can only show 40 columns on its screen so this is used as a window scrolling across the 77 columns and jumping back when it reaches the edge. This makes the program hard to use. Only 99 lines of text can be handled by the program — a pitifully small amount.

Although fairly simple, the spreadsheet is better than the word processor. Its main limit is it can only show three columns of the spreadsheet at once. The spreadsheet can be up to 17 columns by 50 rows. An unusual feature is the spreadsheet and word processor can be on screen together, just a few keystrokes switches between them.

The graphics program is rather disappointing. All it can do is turn a row of numbers from the spreadsheet into a crude bar graph in the word processor.

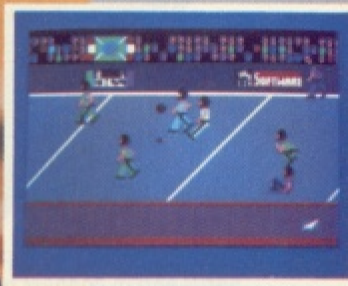
Lastly the database program can hold up to 999 records, each made up from up to 17 fields of 38 characters. It can only be used with a disk drive. The word processor and spreadsheet programs can be used without a disk drive, but they need

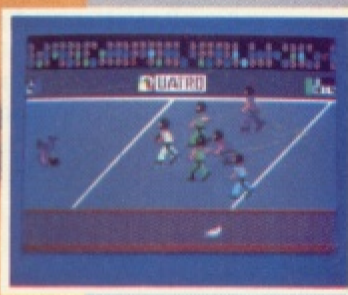


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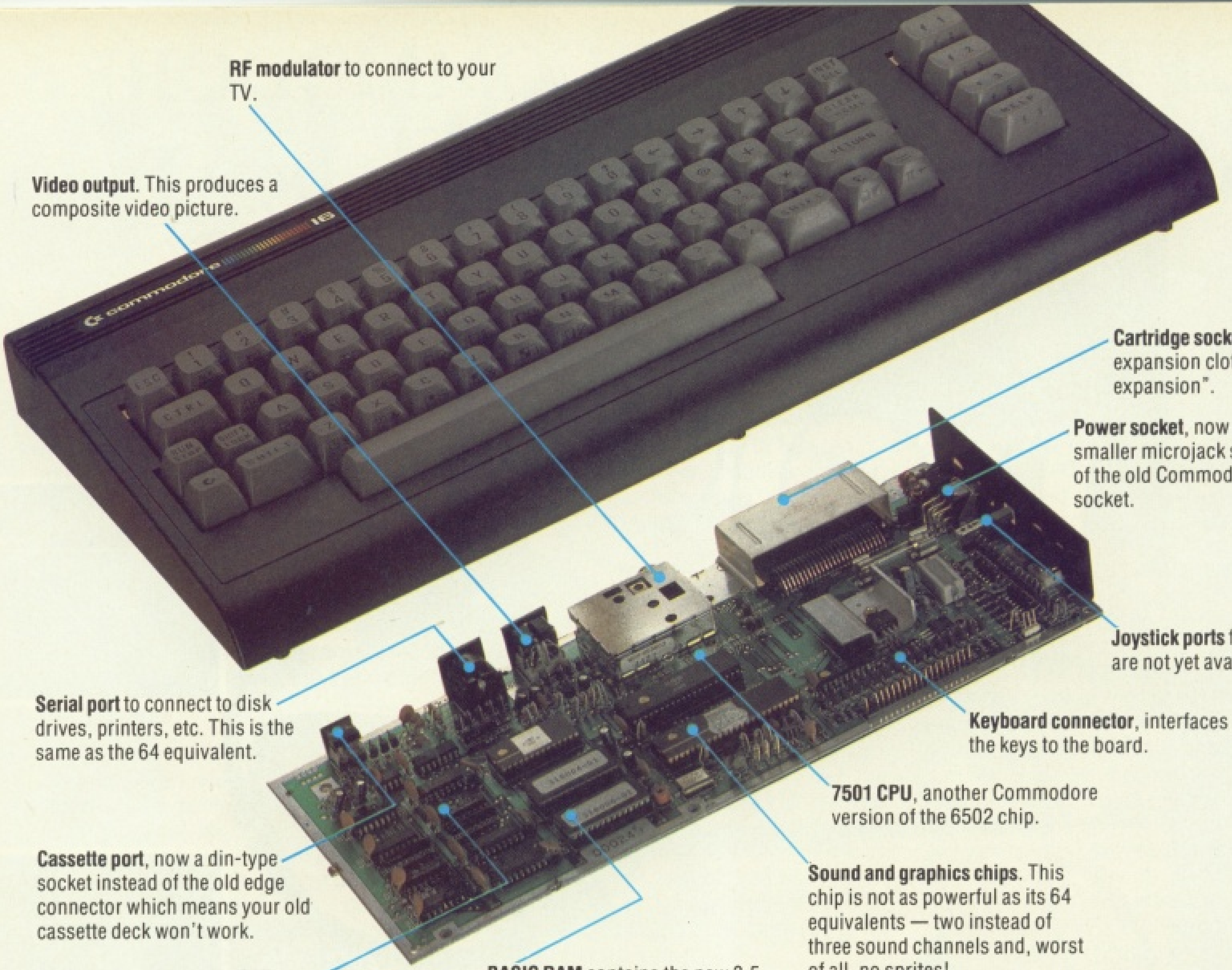
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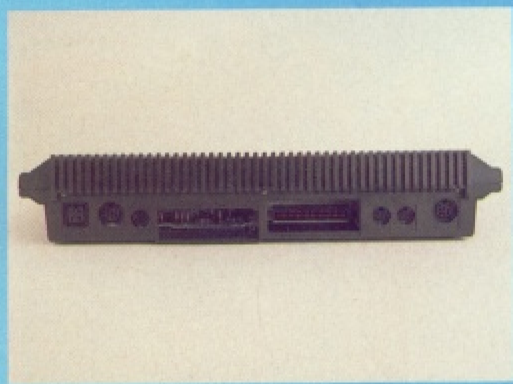
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Commodore *C16*

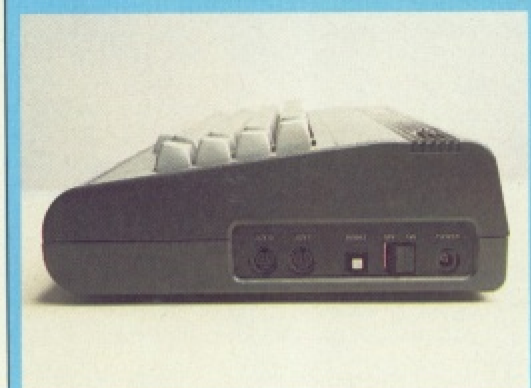
Price	£139
Size	404×216×75 mm
Processor	7501, 0.89 Mhz in text mode, 1.76 in high resolution.
Memory	16K RAM
Resolution	Text 40×25; Graphics 320×160 in 121 colours
Interfaces	2 joystick ports, serial interface, cassette port, cartridge port.
Language	BASIC
Keyboard	68 keys including function keys.
Manuals	Although patchy, is a considerable improvement on previous Commodore manuals.

THE PLUS 4 CONNECTION

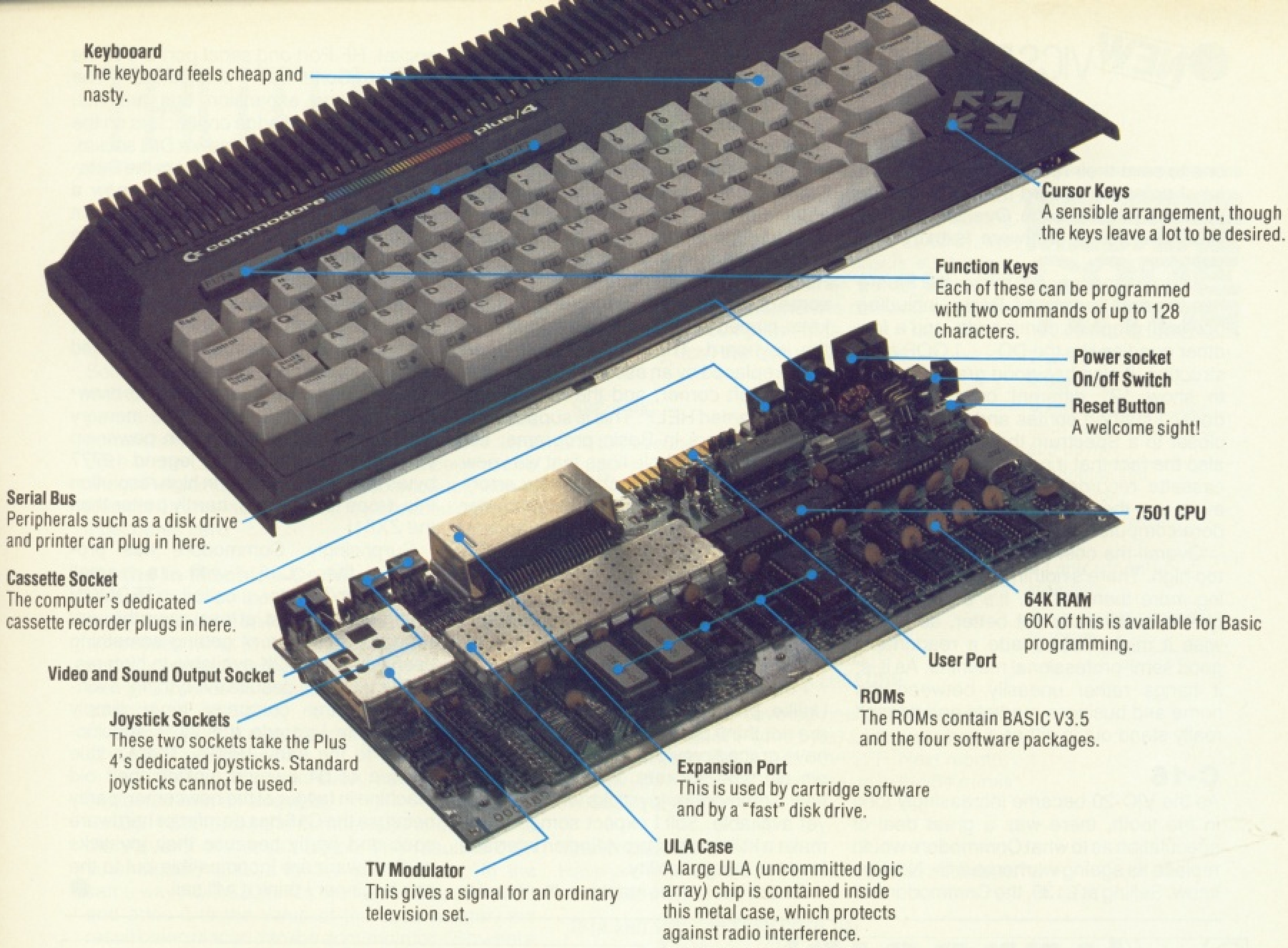



The plus 4 matches the 64's interfaces. The reset button is the only addition.

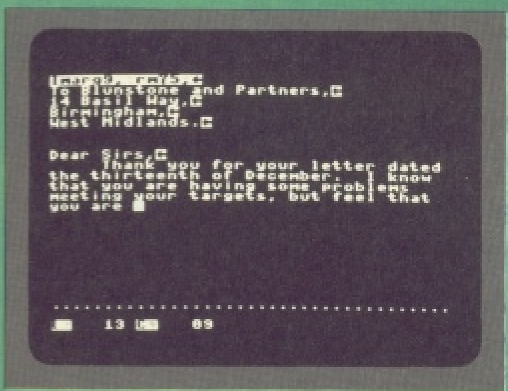
THE C-16 CONNECTION



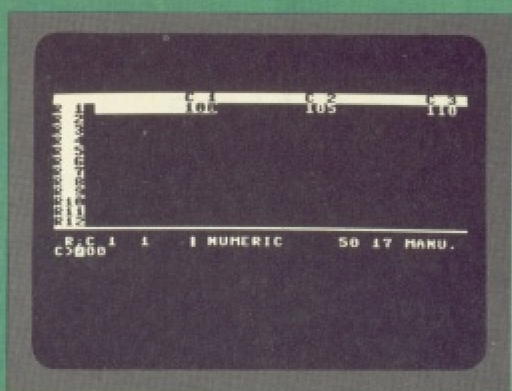

It's those silly joystick ports again. Spot the Spectrum-style power socket.



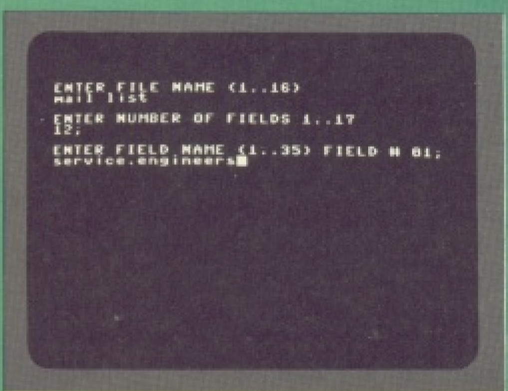
THE PLUS 4 SOFTWARE: They say you get what you pay for; the built-in software is free...



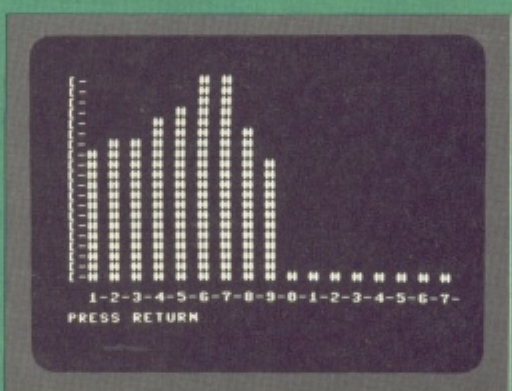
The wordprocessor has been described as a Commodore screen editor with a SAVE command!



VisiCalc it ain't. The spreadsheet is OK for balancing your cheque book.



I could write a better database in a few k of Basic! They call this friendly?



This is the Plus 4's idea of business graphics.

Commodore *PLUS/4*

Price	£300
Size	67×203×338mm
Processor	7501, at 0.9 MHz
Memory	64K RAM, 64k ROM
Resolution	Text 40 by 25. Graphics: 320 by 200 in 121 colours
Interfaces	2 joysticks sockets, serial interface, cartridge/ Parallel port.
Language	BASIC version 3.5
Keyboard	Typewriter-style with 67 keys, including four function keys.
Manuals	The manuals are reasonable by Commodore standards. They teach programming in Basic 3.5 and cover the built-in software. None of the four packages are useable without the "optional" £200 disk drive.

NEW VICS FOR OLD?

one to save their results, so there's not a lot of point! It's absurd they cannot save their results to cassette. Overall, the quality of the built-in software is extremely poor.

As an ordinary home micro, the Plus/4 has a good version of Basic, including powerful graphics commands, and a few other goodies like the DO . . . LOOP construction. It also has good graphics, able to show 121 different colours. Yet it doesn't support sprites and the sound is closer to a Spectrum than a 64. There's also the fact that it needs its own special cassette recorder and joystick: it can't even use the ones from other Commodore computers!

Overall the cost of the Plus/4 is much too high. There's nothing to justify it costing more than the 64. It's a shame the built-in software is not better, as otherwise it might have made a readonably good semi-professional machine. As it is, it hangs rather uneasily between the home and business markets and doesn't really stand out in either.

C-16

As the VIC-20 became increasingly long in the tooth, there was a great deal of speculation as to what Commodore would replace its ageing warhorse with. Now we know. Selling at £139, the Commodore 16 is supplied with the same sort of starter pack for the beginner that was provided for the VIC. Apart from the computer and its power supply you get a manual, cassette machine and six pack of games.

Unlike the Plus 4, which is a Commodore in MSX clothing, the C16 is housed in the familiar Commodore casing. At first glance the keyboard and function keys look identical to the VIC. However, a closer examination shows some changes. There are now four cursor keys, placed in the top right hand corner of the keyboard. The RESTORE key has been replaced by an escape key placed in the top left corner, and the F8 key has been renamed HELP. This is supposed to highlight errors in Basic programs, but often highlights whole lines that we knew were wrong when we got a syntax error!

On the right hand side of the computer is the on-off switch and power socket. Commodore has abandoned the old Din type socket for the power supply and opted for the female microjack that's almost become standard. Another surprise is the inclusion of a reset button, which will provide cold starts.

Finally, there are a pair of joystick ports. Unlike previous machines, these ports are not the 9 pin Atari standard ports that have graced previous machines but are 8 pin din type sockets. These are for the new Commodore joysticks which are not yet available. Still I expect someone will make a killing out of providing an interface for Atari compatability.

On the back of the machine, the monitor socket, RF Port and serial port are of the standard Commodore configuration. The cassette and expansion bus are not. Instead of the old edge connectors on the Vic the cassette port is now a DIN socket, (which will of course only accept the Datasette) and the expansion bus is now a cartridge port. Above the expansion bus it says Memory Expansion. Do not be fooled. Commodore have announced that they have no plans to provide RAM packs and point out that anyone else trying to do so will have to provide a power source for the pack as the bus has not been provided with a suitable power source.

This brings us to the most serious drawback with the C16, the limited memory available to the machine. On power-up you are greeted with the legend 12777 bytes free. Once you are in high resolution this drops to 2 Kbytes, hardly better than the ZX81!

Surprisingly, Commodore has provided the C16 with a small Assembler/Monitor called TEDMON which, while limited, at least gives the user a sporting chance of getting something useful out of the 2K available in high res.

The VIC was, despite everything, a winner and the company have simply decided to upgrade the VIC's specifications to the early 1980's. There's little chance of 64 owners junking their old machine in favour of the newcomer, partly because the C16 has an inferior hardware spec and partly because their joysticks and software are incompatible but to the raw beginner I think it will sell. ●

TRUTH TABLES

THE COMPLETE Y64 **MACHINE CODE TUTOR**

Part 5 Truth Tables:

- Using machine code from within Basic (SYS and USR).
- Addition and subtraction.
- More addressing modes.
- Logic ('truth') arithmetic

Binary to hex converter program.

Last month I asked you to write a program to put the 64's upper-case character set on to the screen coloured yellow. To do this, I gave you two new commands: TAY and TYA (Transfer accumulator to Y and Transfer Y to accumulator). These two commands allow us to get around the fact that the 64 does not offer an instruction to increase the accumulátor. My solution is given in the Homework Solution box. This program uses the looping method that I described last month. The important part to note (and what I was testing you on in the homework) is that the Y index is only equal to zero once in the LOOP, when the loop has been round once. Remember: when the accumulator, either index or any memory location is increased past $FF it becomes zero.

Maths In Machine Code

In part three of the Tutor, I mentioned that the accumulator had special mathematical commands associated with it which could not be used with the X and Y indexes. There are basically only four things that you can do to a number in machine code — addition, subtraction, multiplication by 2 and division by 2. This month we're going to have a look at the first two of these.

The ADC or ADd with Carry command is best explained with an example:

ADC #$20 takes the number $20 and adds it to the value of the accumulator. The result is then automatically placed in the accumulator. In the same way ADC $20 takes the value of location $20 and adds it to the value of the accumulator, the result being placed into the accumulator. "So where does the Carry flag come into it?" I hear you ask. Well, the above examples of ADC are slightly simplified. What actually happens is that the value of the accumulator, the number or the contents of the address in the ADC command and the carry flag (one or zero) are all added together, the result being placed into the accumulator. If you want to add one to the accumulator, do this:

```
SEC
ADC #$00
```

The command SEC (or SEt Carry) sets the carry flag to one. Therefore the carry is added to the number $00 and both are added to the accumulator. The accumulator is therefore increased by one. If you don't want the carry flag to influence your calculations, then you must use a CLC (Clear Carry) command, before doing the ADC. For example:

```
CLC
ADC $10
```

adds the contents of location $10 to the accumulator and since the carry flag has been cleared, it does not enter into the calculation. If the result of the calculation is over $FF then the carry flag will be set so that your program can deal with the situation. You will notice that it's not possible to add two memory locations (or for that matter, the X and Y indexes) without going via the accumulator.

So much for addition, but what about subtraction? The command for subtracting a number from the accumulator is SBC (or SuBtract with Carry). This works in much the same way as the ADC command. For example:

SBC #$20 takes the number $20 away from the accumulator (*not* the accumulator away from the number!). As you can tell from the name, SuBtract with Carry, the carry flag also comes into use with the SBC command. Instead of the carry itself being taken away from the accumulator (as in ADC), the complement (opposite) of the carry is subtracted from the accumulator. In other words, when the carry is zero, its complement is one and when the carry is one, its complement is zero. Therefore to take 1 away from the accumulator use:

```
CLC
SBC #$00
```

and to have the carry ignored during a subtraction:

```
SEC
SBC #$20
```

So for example:

To add $05 to a memory location:	To subtract $05 from a memory location:
CLC	SEC
LDA LOCATION	LDA LOCATION
ADC #$05	SBC #$05
STA LOCATION	STA LOCATION

So far we have only covered how to add numbers that are less than $FF (one byte) and how to handle properly a result that is less than $FF. Next month, I'll show you how to add numbers up to the 64's limit of 65536 ($FFFF).

Truth tables

Have you ever looked at a Basic program and seen a line like this:

```
IF (A AND 127) = 25 THEN GOTO 100
```

and wondered what it means? It is in fact an example of logic (or truth) arithmetic. Logic arithmetic makes use of what are known as 'Truth tables'. In computing we use these a little differently from mathematicians, so if you've never heard of them you're probably at an advantage! If you have a look at the Truth Tables box, you'll see truth tables for the three logical instructions available to us on the 64 — AND, OR and EOR (Exclusive-OR).

From the truth tables, you will see that once again, we are looking at the binary (ones and zeros) system of numbering. If the truth tables only cover ones and zeros, how do they extend for use with numbers larger than one? The secret (and the reason that we looked at binary last month), is that you have to look at each bit (binary digit) in turn and apply the truth table rules to it. Quite a few of the 64's locations (For example the sprite and joystick locations) are better looked at from a binary point of view. How the logical commands work will become clearer as we take a look at each one individually.

The first logical command we'll look at is the AND command. From the logic table, you'll notice that unless you AND two 1s you always get a result of zero. You should also note that although some

HOMEWORK SOLUTION

The first point to note about our Homework Solution program is that we've used the '!' (equivalent of the Basic REM statement) to break up the listing into logical sections. This makes the program much easier to read.

The listing itself makes use of the TYA instruction introduced last month. We start by defining two labels and setting the Y index to zero before beginning the loop.

Within the loop, we transfer the content of the Y index to the accumulator and store this value at SCREEN plus the Y index. We then set the accumulator to $07 (the colour code for yellow) and store this result at the next position in colour RAM. Finally we add one to the Y index and check whether we've gone through the entire character set (that is, when the Y index has rolled over from 255 back to zero).

COULD THIS BE YOUR PROGRAM?



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THE AND, OR AND EOR TRUTH TABLES

AND

Bit 1	Bit 2	Result
0	0	0
0	1	0
1	0	0
1	1	1

OR

Bit 1	Bit 2	Result
0	0	0
0	1	1
1	0	1
1	1	1

EOR

Bit 1	Bit 2	Result
0	0	0
0	1	1
1	0	1
1	1	0

These simple truth, or logic, tables show how the logical operators AND, OR and EOR work. AND will produce a result of one when both the first **and** the second operands (values operated on) are set to one. OR results in one when either the first **or** the second operand is set to one. EOR (Exclusive OR) only results in one when an OR is true (results in one) but an AND isn't.

assemblers accept binary numbers as long as they are preceded by a '%', your assembler may not. If this is the case you'll have to use the binary to hex conversion program shown below. Let's take an example. If a location in memory contains the number %11010101, what happens if we AND it with the number %10101010? Remembering that we must look at each bit individually using the AND truth table, the problem becomes (taking each bit in turn):

(1AND1)+(1AND0)+(1AND0)+(1AND0)+
(1AND0)+(1AND0)+(1AND0)+(1AND0),

which gives the result %10000000 (128 decimal). In machine code the logical commands operate only upon the accumulator. For example, if a location labelled LOCATION contains %01010101:

```
LDA LOCATION
AND #%10101010
```

The accumulator now contains the result (zero). The accumulator can now be tested to find the result. So, we can AND locations and numbers — so what? Let's look at a more practical example. Those of you who have used the joystick (either port) in your Basic programs will have found that, to test whether the joystick button is depressed or not, you'll have had to use a line like:

```
IF PEEK (56320) = 111 THEN 1000 :REM BUTTON PRESSED.
```

Location 56320 ($DC00) is the location of joystick port 2. If you look at the difference in the reading when the button is pressed, and when it's not, you'll find a difference of 16 decimal. This means that bit number 4 (16 is 2 to the power of 4) is a flag as to whether the button is being pressed. In machine code, to check whether the button is being pressed, we simply AND the value of location 56320 ($DC00 for joystick in port 2) with %00010000. If the result is 16 (%00010000) then the button is not depressed. If the result is zero then the button is depressed.

```
LDA $DC00          ! JOYSTICK 2
AND #%00010000
CMP #$00
BEQ BUTTONPRESSED
```

In this way it's possible to use the AND command to test any bit in a particular location by ANDing the location with a number that is equivalent to that bit.

There is, however a more important use for the AND command. It's also possible to use the AND command to turn any particular bit in a location off (in other words, make the bit zero). If you AND either zero or one with zero, the result is always zero. Using this and the fact that any bit that is ANDed with one will stay the same, to turn a bit off, simply AND the location with a number equal to %11111111 ($FF) minus the value of the bit that you wish to turn off.

For example:

```
LDA LOCATION
AND #%11011111
STA LOCATION
```

would turn bit 5 of the location off and leave the other bits undisturbed. In other words if you AND a bit that is already 1 with zero then it will be turned off, and a bit that is 1 and is ANDed with 1 will remain set.

Let's now look at the OR command. This, like AND, operates on the accumulator. Since each assembler command must have three letters, OR becomes ORA (OR Accumulator). If you look at the truth table for the OR command, you'll see that unless two zeroes are ORed, the result is always one. This is much the opposite of the AND command. The main use for the OR command is to set bits in a location. This is achieved by ORing a location with a number equivalent to the bit that you wish to set. For example, to set bits four and five of a location:

```
LDA LOCATION
ORA #%00110000
STA LOCATION
```

Of course, all of the other bits of the location are also ORed with the number. If, for example, bit one is already set then it will be ORed with zero and the result will be one. Therefore, as with the AND command, it is possible to ignore bits that you don't want to change.

The last of the three logical commands available to us in machine code is the EOR command. Like OR and AND, this operates on the accumulator. As you can see from the truth table for EOR, any value that is EOR with another, is toggled to its opposite binary value. For instance, if %00000001 is EORed with %00000001 then the result is zero. For example:

```
LDA LOCATION
```

```
* = $C000 !START LOCATION
!
SCREEN          =   $0400       !DEFINE LABEL 'SCREEN'
COLSCREEN       =   $D800       !DEFINE 'COLSCREEN'
!
                LDY #$00        !Y INDEX = $00
!
LOOP            TYA             !MAKE ACCUMULATOR = Y
                STA SCREEN,Y    !SCREEN+Y = A
                LDA #$07        !ACCUMULATOR = YELLOW
                STA COLSCREEN,Y !COLSCREEN+Y = A
                INY             !INCREASE Y
                CPY #$00        !IS Y = $00?
                BNE LOOP        !IF NOT EQUAL THEN LOOP
!
                RTS             !RETURN TO BASIC
!
```

```
EOR #%00010010
STA LOCATION
```

Use the binary number after the EOR command to point to which bits you want to toggle. In the above case bits 1 and 4 in the LOCATION will be toggled from their previous value to the opposite Binary value.

Using these three commands, you now have command of every single bit in every single byte in your 64's memory. In this way, you can now store eight variables in every location instead of only one. Of course, each of these variables can only take the value one or zero, but this can be ideal in certain circumstances. An example is in adventure games, where you want to flag doors as open or closed, and items as held or not.

More Addressing Modes

Last month we looked at absolute indexed addressing:

For example,

```
LDA LOCATION, Y
```

This takes the value of the Y index and adds it to the location. The accumulator is then made equal to the value of the location pointed at. In this way we can change the Y (or X) index to point at any location within the range LOCATION to LOCATION+$FF ($FF being the maximum value of the indexes). What we really need is a way of changing the value of location itself in the LDA command, so that our programs can look at any location in memory.

Before we can look at this new command, we must consider the two types of location that are possible with the 64. The first of these is an absolute location (or address) and this has a value in memory of anything greater than $FF. In other words any location over and including $0100 in memory, is called an absolute address. Locations below $0100 are called ZERO PAGE addresses. Each $0100 (256 decimal) set of memory locations is called a page.

The new type of addressing that we will be looking at this month is called zero-page indexed addressing, because it uses two of these zero page addresses to point to any memory location. It looks like this:

```
LDA ($22), Y
```

For this addressing mode, only the Y index can be used. So, how does it work?

First of all two numbers are stored (in the lo-hi format that we looked at last time) in locations $22 and $23. These two locations can be any in zero-page, but they must not be used by the 64's operating-system. Locations $22 to $23 are used by the 64 when it's communicating with an RS232 device and therefore are unused for our purposes (you're unlikely to be using a modem or printer while your machine code program is running). To calculate the value of the address that is being pointed at, take the value of location $23 (the Hi component), multiply it by 256 and add the value of location $22 (the Lo component). Since $23 is measuring in 256's, changing it by one will make the LDA point at another page in memory. The location thus calculated is added to the Y index to point at another location within $FF of the original location. The accumulator is then loaded with the value of this location. Let's take a line-by line look at an example:

```
* = $C000
SCREEN = $0400
```

Tell the assembler where to place code and define label SCREEN.

```
LDY #$00
```

Zero the Y index.

```
LDA #<SCREEN
```

'#<' tells your assembler to take the lo component of SCREEN which is the number $00 (SCREEN is $0400) and store the result in the accumulator.

```
STA $22
```

Put the lo component of SCREEN in location $22 ready for use with the zero-paged indexed addressing.

```
LDA #>SCREEN
STA $23
```

Put the Hi component of SCREEN in 23.

```
LOOP   LDA #$20
                       !$20 is 32 decimal (space)
       STA ($22), Y    !Make ($22)+Y equal to the
                       accumulator
       CLC             !Clear the carry flag ready for
                       addition
       LDA $22
       ADC #$01        !Add one to $22 — the lo
                       component
       STA $22
       BCC LOOP        !If the carry is clear then loop,
                       that is, $22 has not rolled over
       RTS             !Return to Basic
```

The above program will clear the first 256 locations of the screen. You could have achieved this by several other methods, but this gives the general idea as to how zero-page indexed addressing can be used. We'll be covering zero-page indexed addressing in more detail, but in the meantime you should experiment with it in your own programs, because it's the most widely used type of addressing.

Homework

With only two parts of the Machine Code Tutor left to go, you should be well on the road to machine code supremacy. Next month I'll be showing you how to use the 64s inbuilt routines.

For this month's homework, I want you to write a program that takes the value of location 830 (a location in the cassette buffer) and adds or subtracts 10, placing the result back into 830. Whether you add or subtract is determined by the value of location 831 (zero for addition, one for a subtraction). You can give your machine code program a good testing by using a Basic program and the SYS command to place different values into 830 and 831. Of course, if the addition or subtraction goes above the number 255 or below zero then location 830 will roll up or down. How do we test for this? — I'll tell you next month.

Next month: The Kernal

- Multiplication and division by 2.
- Addition and subtraction of numbers over $FF.
- More addressing modes.
- Kernal routines.
- Subroutines.

```
100 H$="0123456789ABCDEF":PRINT"[CLR]INPUT A BINARY NUMBER (%)[RVS]":INPUTBN$
110 IFLEN(BN$)<8THENBN$="0"+BN$:GOTO110
120 FORI=0TO7:B(I/4)=B(I/4)+VAL(MID$(BN$,LEN(BN$)-I,1))*2↑I:NEXT:B(1)=B(1)/16
130 PRINT"[RVS]HEX = $";:FORI=1TO0STEP-1:A$=MID$(H$,B(I)+1,1):PRINTA$;:NEXT
READY.
```

● **Y64's Binary to hex converter program**

●EXCLUSIVE REVIEW

COMMODORE'S MUSIC MAKER

SINGA LONGA SID

Sound is one of the 64's strongest features; how many other machines can boast a built-in synthesiser? But creating music has always been a difficult and frustrating experience ... until now, that is. Dick Pountain *presents an exclusive review of Commodore's Music Maker.*

The *SID* chip is one of the machine's strongest points by virtue of its very powerful features, including three voices plus noise, four preset waveform types, digital filters and ring modulation for fancy sound effects. The power of *SID* accounts for the high quality of the music in most 64 games nowadays.

Unfortunately, like so many other things on the 64, sound is a *pig* to use from Basic. To do most of the fancy stuff you need to use machine code, or one of the extended Basics. Even then, the intricacies of programming *SID* are such that by the time you've written a line of music you'll probably have forgotten the tune!

Music Maker offers an easy way out. Music Sales, one of the world's largest pop music publishers, has launched a series of music products for the 64, called *SFX* (Sound n' Effects); the products will be officially marketed by Commodore. The *Music Maker* package is the first part of *SFX,* and consists of a piano style keyboard overlay plus a program on cassette or disk. Together they allow you to play tunes directly like an electric organ, using single notes or chords; to change voices and create new voices of your own using a simple menu: and to store tunes to be automatically replayed.

Y64 DATACARD

NAME: Music Maker

TYPE OF PROGRAM: Synthesiser

MEDIA: Cassette and disk

PRICE: £29.95

SUPPLIER: Commodore

REVIEW COPY OBTAINED FROM: Commodore: 0536 205555

Hardware

The *Music Maker* keyboard is a very clever piece of plastic fabrication indeed. It comes in a grey frame which matches the 64 case, and simply clips over the keyboard so that its two octaves' worth of keys rest on the top two rows of the 64 keys and push them down when pressed. There are no switches or genuinely moving parts at all: the black and white keys are rigidly welded to the frame and are hinged merely by bending the plastic. The keys are made of strong, flexible, high density polypropylene (as used for buckets and dustbins). Whether the "hinges"





MUSIC ON THE 64

The 64, arguably, has the most sophisticated musical capabilities of any home computer on the market. The reason for this is that the 64 actually contains a complete musical synthesiser — the Sound Interface Device, or SID chip.

The SID chip is extremely powerful, offering most of the facilities of a professional synthesiser costing thousands of pounds. Some quite spectacular effects can be achieved using no more than a few POKEs — albeit messy ones.

Once a sound has been defined and initiated by a program, the SID chip does its work completely independently of the processor so the program can get on with other tasks — even return control to the user — and the sound will continue to play.

Most music packages are a combination of a synthesiser and programmable sequencer. *Synthesisers* control the sound of a note — making it sound like a flute or a viola or a piano and so on. *Sequencers* simply store a sequence of notes — in other words, a tune. *Programmable sequencers* allow the user to enter and edit a sequence of notes; to play the tune, the notes are passed from the sequencer to the synthesiser. We'll talk about this in more detail next month when we look at the SID chip.

will eventually succumb to plastic fatigue, only time will tell.

The keyboard, despite its extreme simplicity, works very well indeed, giving a firm and positive feel. Any deficiency in response compared to a real electric organ is due to lag in the software rather than any mechanical inertia in the keys.

Software

I tested a disk version of the *Music Maker* software, which loaded reliably, if slowly, from the 1541 drive. The main control screen presents a menu of options all of which are selected by pressing the function keys F1 to F8, and the system is now ready to play. At the foot of the screen is a picture of the keyboard (annotated with the note names), and as you press each note a blue cursor lights up on the corresponding key in the picture; kids loved this feature.

With no options selected, you can play single notes only — though you can embellish them with synth-style "slides" by hitting the spacebar immediately after the note. This produces an upward *glissando* effect until you release the spacebar. Unfortunately the depth of the keyboard overlay means that the spacebar is deeply recessed and therefore not easy to hit.

Hitting F4 changes the pitch of the keys by one octave, allowing six octaves in all to be covered but with only two available at a time. The octave change needs two seconds to take effect, which makes it awkward while playing a tune.

F2 selects one of three bass and drum rhythm tracks (one 12-bar boogie, one funk and one waltz!) which you can play along to. The cursor keys can be used to change the speed and F1 changes the bass between electric, string and none.

F5 chooses one of 8 voices, and F6 allows you to change the voice parameters for any voice using a menu to step through the preset value ranges using F5. ADSR, waveform type, filter type and cutoff can be altered, but not sync or ring modulation.

F3 selects "Poly Play" mode. In this mode you can play three note chords in any octave or voice.

F7 puts you into the sequencer. This presents a new screen menu, and allows you to store notes as they are played. A display at the foot of the screen shows you how many notes you've entered, and the names of the last 13 notes. Mistakes can be caught at this stage by deleting the last note entered, though you can't edit tunes once entry is complete. When a tune is complete, you can then enter the timing separately by hitting any key. Then you can have the whole tune played back automatically. The single-key play idea, pioneered by Casio, makes it possible for people with no musical ability (including young children) to make music. *Music Maker* comes with a book of simple tunes which can be entered with the aid of stick-on key labels. A whole series of extra books is available from Music Sales.

Both voices and sequences (tunes) can

be saved to and retrieved from disk, and some (rather poor) sample tunes are included on the program disk.

Limitations and Problems

The most severe limitation of the package is its inability to combine 'poly' and 'sequence' modes, so recorded tunes are restricted to single notes only. It's also irritating not to be able to fully edit a stored tune.

You can't use rhythm tracks in poly mode (a limit imposed by *SID*, which has only three independent voices). The display keys don't light up in this mode and sliding is not available.

When playing single notes with a rhythm track, it's not possible to change octave or voice without reselecting the rhythm.

The top key on the keyboard (which sits over the 64's INST/DEL key) has a 'prong' which is slightly too short and I needed to pad the INST/DEL key with sticky tape to make it work reliably!

The software I tested was not altogether robust. I crashed it several times, though no pattern became evident. Sometimes it crashed with "Out of Memory" errors, sometimes with "Illegal quantity". Fortunately it has been written so that after an error any keypress causes it to restart (a 30 second set-up procedure) rather than requiring a reload from tape or disk; you do however lose any tune or voices that you haven't saved.

Conclusion

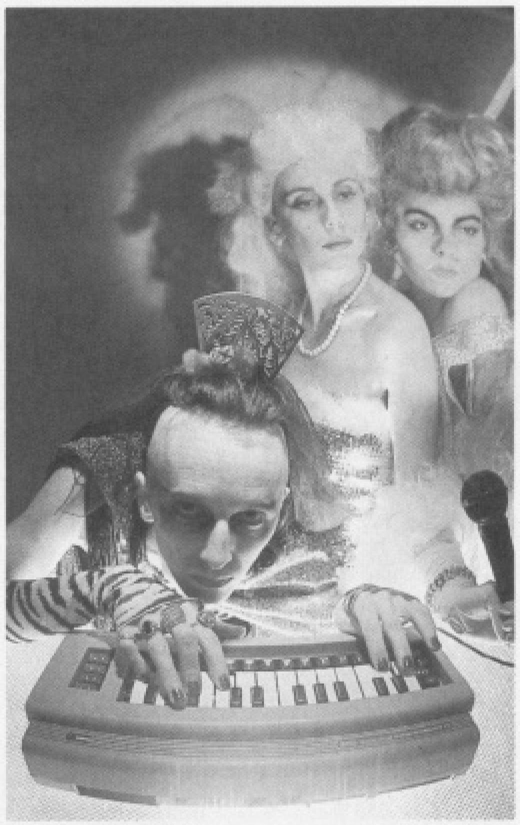
The *Music Maker* software is extremely easy to use. It's also very limited in scope, approximating a medium price electronic keyboard rather than a professional synth. As such, it's highly suitable for young children and general home fun use, though the software ought to be a bit more robust.

The great advantage of *SFX* over a dedicated electronic keyboard is that by changing the software you can change the use. There are already more advanced follow up packages in the pipeline. One called Pro-Synth (due to be launched at Frankfurt this month) will allow the full power of the *SID* to be used, to give synth effects like ring modulation, portamenta, phasing and vibrato, and a series of music books of tunes by top groups like the Police and Duran Duran will allow you to play along using Pro-Synth sounds. Most spectacular of all is a digital sampling box (complete with mike) for £50, which lets you play tunes using recorded sounds, like a very cut-price Fairlight Synthesiser. A library of sound effects will be sold very cheaply too.

At a mere £29.95 I consider *Music Maker* excellent value for money, warts and all. As a first step into the future range of *SFX* products it represents a genuine advance: the world of the new electronic music at consumer prices.

INTRODUCING PSYCON

Psycon, who write their own music are a dance club oriented band. Violet Immaculate was going to be an opera singer and Nana wanted to become a nun before Richard Gdansk persuaded them both to form the group instead. Since June, when they got together, they've recorded a single with Interdisc called "Make yourself scarce" and are almost ready to record their second, "Blue Rose". West Country readers will be able to catch them on TV South West's "Freeze-Frame", while the rest of you will have to wait until after Christmas to see them on Channel 4's "The Tube". Psycon will be among the judges of next month's competition, in which you could win a much-yearned for 4-track Portastudio worth £500.

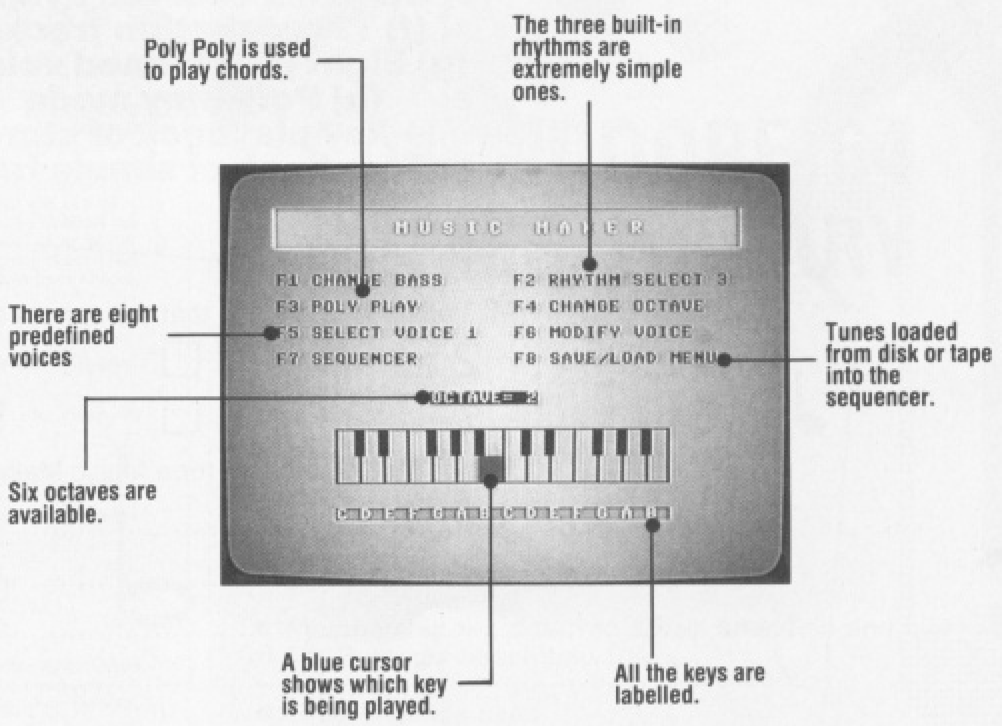


Psycon: unimpressed

Rick Reckons...

"The first thing I thought when I saw the keyboard was yeugh — it looks so tacky, but don't be fooled by appearances. I was surprised to find that it's quite responsive and easy to use. Just as well, because that manual's not too hot. There's an inbuilt range of pre-programmed rhythm patterns. I wanted to change them but no, that was asking too much. You can set a sequence (or even type in a tune) which is useful, but I wanted to get it to play in time to the preset rhythm, and guess what? Right — it won't. You have to tap the space bar in time to the rhythm yourself, you can't link the two automatically. As for the sound, well, you know those cheapo toy synthesisers? I suppose for someone whose main interest is in computers and who just wants the musical bit as a hobby this would be the ideal plaything, but if there are any musicians out there then be warned — this one is strictly for beginners, so forget it if you want it for its musical qualities. But to end on a more positive note, it's definitely the best singing typewriter around."

THE MAIN MENU



All of Music Maker's functions are selected from this menu using the function keys.

FREE FLEXIDISK!

The best way to get an impression of a music package is to listen to it. And here's your chance to do just that with Music Maker!

The free flexidisk on the cover will play such old singalongs as Beethoven's 5th Symphony, The Entertainer, Greensleeves, Scarborough Fair and others to demonstrate Music Maker's range of facilities. Play it just like an ordinary 45 rpm record.

Next month

Next month *Y64* will be carrying out a complete comparative review of all the major music packages available on the 64, including Music Maker.

YOUR 64/COMMODORE COMPETITION

You've read the review of Music Maker, and want one. But why part with your hard-earned cash when you could let Commodore part with its hard-earned software? We've got no less than 25 packages of software plus keyboard overlays to give away in this month's free competition.

All you have to do is put the list of Music Makers features below into order of importance, then tell us why you'd like to win one. The first 25 entries out of the hat matching the order we've selected will win a copy of the package. In addition, the person supplying the wittiest answer to the tie-breaker question will win a complete Commodore 64 disk system to run Music Maker on. And if you've already got one, you can always sell your old system and use our sparkling new one instead!

"P(L)AY IT AGAIN, COMMODORE!",

HOW TO ENTER

As always, it's dead easy to enter. Just put the features A to J in order of importance. For example, if you think that (a) Menu-driven commands is the most important feature, write (a) in box 1, and so on. When you've filled all the boxes, complete the tie-breaker sentence using not more than 12 words. The wittiest answer to this question will win both a Music Maker package and a CBM 64 plus 1541 disk drive!
But read the review in this issue first.

THE CRUNCH

What's so good about Music Maker? Simply put this list of features into order of importance.

(a) Menu-driven commands
(b) Produced by Music Sales — one of the world's largest pop publishers
(c) Piano-style keyboard overlay
(d) Animated keyboard display
(e) Up to six octaves available
(f) Three rhythm tracks
(g) Eight pre-defined voices
(h) Poly-play mode
(i) Single-key playback of stored tunes
(j) Free book of simple tunes

It's obvious to anyone that the correct order is:

1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
6 ☐	7 ☐	8 ☐	9 ☐	10 ☐

I'd like to hit Commodore for a Music Maker because

....

....

Name ....

Address ....

....Postcode...............

Use a photocopy if you don't want to cut up your magazine.

Make sure your entry is complete — especially the tie-breaker — then rush it to *Y64 Music Maker Compo, 14 Rathbone Place, London W1P 1DE.* All entries must, please, arrive by 10am on the 28th February, 1985.

GROUNDRULES

1. The decision of the judges is final. No correspondence will be entered into.
2. Entries which are illegible, incomplete or do not fully satisfy the rules will be disqualified.
3. All materials will be retained and may be published without further permission.
4. All entries must be received by 28th February, 1985.



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CP/M FOR MICROS???

Now your personal computer can run CP/M. That's right! Any micro with an RS232 port and a Terminal Emulation Package can now run CP/M.
The OMEGA opens up a new world to you and enables you to run any of hundreds of Business and Recreational software packages, from both commercial and user group sources. Your micro is no longer restricted to one or two languages, the Omega is sold with Basic and one other language of your choice (Cobol, Fortran, Pascal, Forth).
WHAT IS THE "OMEGA"? The "OMEGA" is a single board module which will allow a micro with an RS232 port to plug in and run CP/M. OMEGA has a 4MHz Z80A CPU, 64K of RAM, 2 software-controllable RS232 ports, a Centronics Port, 4K Monitor Eprom. The OMEGA can support four disc drives, single or double sided, single or double density, 48 or 96 TPI. OMEGA runs under CP/M 2.2. It has a set of utilities for formatting and copying data. A disk translation facility lets OMEGA read, write and execute programs and data from Kaypro, Morrow Decision, IBM PC and others.

SPECIFICATIONS
Hardware:

Processor — Z80A microprocessor operating at 4MHz.
Memory — 64K bytes of RAM; 4K bytes of ROM
Serial Ports — Two RS232C compatible ports for terminal, modern or serial interfaced printer. Baud rates from 75 to 38.4K baud.
Printer Port — Centronics-compatible

Software

Operating Systems — CP/M 2.2 with enhanced BIOS and CCP.
System Utilities, including formatting, back-up, system configuration and translation of other 5¼ disc formats.

OMEGA SCSI/PLUS ADAPTER

FEATURES:
★ MOUNTS DIRECTLY ON OMEGA (5.75"X6").
★ LOW COST I/O EXPANSION AND HARD DISK CONTROLLER INTERFACE:
★ 16 BI-DIRECTIONAL I/O LINES: 40 mA output drive.
★ HARD DISK/TAPE CONTROLLER INTERFACE: SCSI (ANSI X3T9.2) initiator AND Target interface (software controlled); bus arbitration in hardware; full 40 mA drive capability);
★ SLAVE I/O BOARD INTERFACE: unique SCSI bus extension control of 256 "slave modules — simultaneously with up to 8 SCSI "initiators" or "targets".
" Optional DMA addition to the OMEGA; up to four Megabits/sec throughput over SCSI/PLUS bus
" BIOS support SCSI Winchester controllers.

DESCRIPTION
The SCSI/Plus adaptor provides the OMEGA With the added features of a hard disk and tape controller interface, general purpose I/O expansion, and optional DMA. Its size and mounting hole configuration make it an ideal companion to OMEGA, and simplify the addition of these features to any system based upon it.

★ ★ ★

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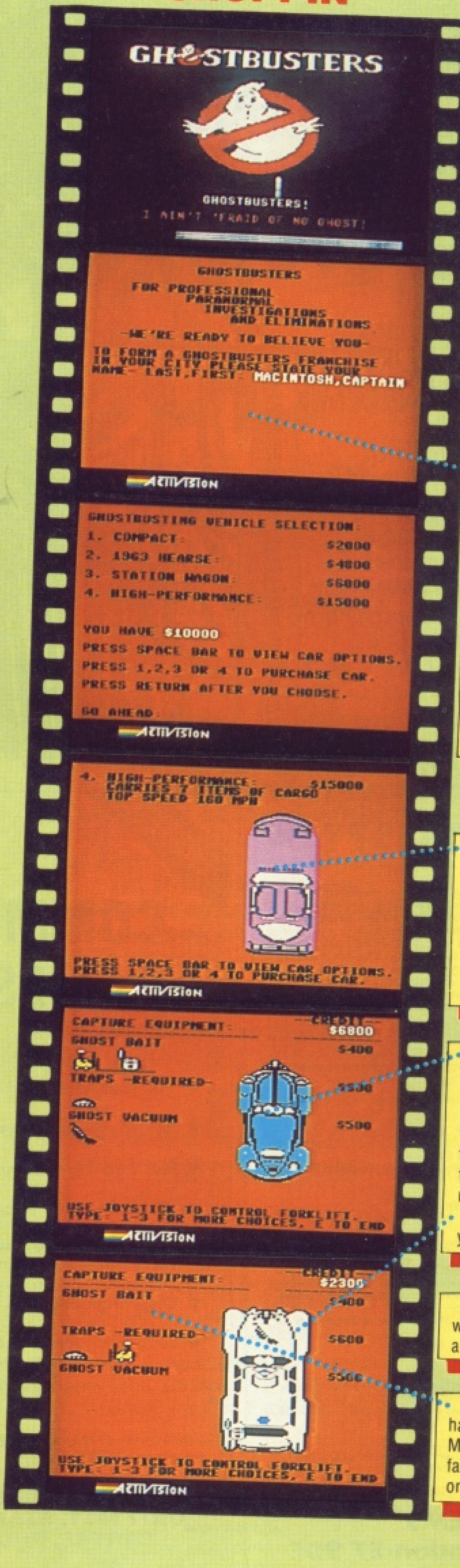
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GHOSTBUSTERS!

The film Ghostbusters *broke several box-office records in the States and looks set to do the same here.* Ian McKinnell *and* Sophie Wright *wondered whether the game could possibly be as good as the film.*

SHOPPIN'





And in the beginning ... If you've already built up a franchise you'll have an eight figure code that will tell the machine your name and credit line (a clever alternative to saving a previous game).
Should you enter a silly name you'd better make sure you remember it *exactly*!

Here's the price list, it's up to you to decide on the best buy — bearing in mind that you're not allowed to overstep your credit, so first-timers can forget that sports car now.
Then, in games as in life, decisions have to be made ...

This is the ultimate option to bring out the gold-medallion and chest-wig in you, the high-performance car, the Portable Laser Confinement System — the works. Fast, it cuts down the boredom of travel; efficient, you hardly ever have to go back to GHQ — but so expensive you'll never be able to repay the loan. So enjoy it while you can and to hell with tomorrow.

The cheapskate option, the Compact car (or a VW Beetle to you and me). Slower than a Commodore disk-drive, and just as boring, it carries so little that you'll spend most of your time on the road back to GHQ wondering if there's some way of trading it in without finishing the entire game (there isn't'). Not a mistake you'll repeat.
Allow me to recommend the hearse to those of you of more limited means.

The Station Wagon is the best buy for those with an established business, combining speed and space at a modest chunk of your loan.

The Ghost Bait is essential, unless you enjoy having your city and score molested by Marshmallows. So too are the ghost traps, in fact you can't start until you've loaded at least one.

GHOSTBUSTIN'



This is the site of the disturbance and where most of the action takes place. But first you have to get here in your chosen vehicle — see below.



Get used to this sequence — you'll see a lot of it, with only the occasional Roamer to liven things up. Schlurp them up with your ghost vacuum (you did remember to buy one, didn't you?) otherwise they'll only increase your angst level as you'll be powerless against them.



Perfection of your technique here is everything, for failing to trap the nasty means not only that one or more of your devoted employees is about to pass into the spirit world himself (and whilst the sound effects are incredible, it's possible to tire of hearing "He slimed me" for the nth time). Begin by dropping your trap, in the middle of the screen ...

And manoeuvre your first Ghostbuster to the other end of the screen. Make sure you leave him facing the right way.



Bring in the rest of the troops. Wait until the Slimer is within the range of your beam then *energise* the negative ioniser back packs (the less you use these, the less you have to return to GHQ) to trap the beast and force it over the trap ... (Make sure that the beams don't cross!)



... then squeeze the button *et voila*! the slimer is ensnared and your bank account is enhanced in direct proportion to the time it took.

Well, that was it, now all you've got to do is a repeat performance ad infinitum, or until the PK level reaches danger level, whichever is the sooner.

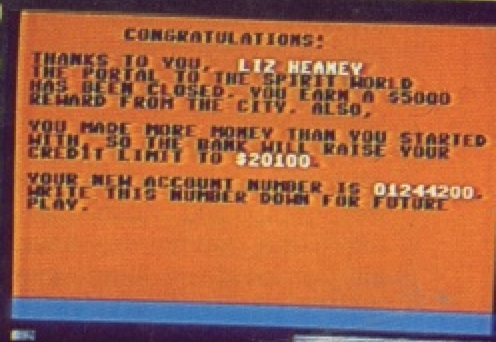


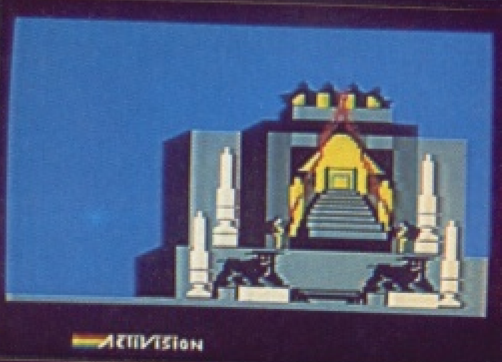
CRUISIN'



Use the map to plan your strategy — the shortest route (pronounced rowt, of course) to the scene of the disturbance which will freeze the most Roamers for your eager vacuum while you note the next likely disturbance, etc. A little kinetics applied to the space bar will give you your status. And all the time your finger hovers over the B key waiting for the dreaded ...

STOMPIN'







... Marshmallow Man! He may strike fear into the hearts of the uninitiated and do even worse things to your bank balance, but for the more experienced franchise with an index finger that can travel at the speed of light he can be a boon, for the Mayor will award you $2000 every time you thwart this "monolith of marshmallow monstrosity".

And you keep playing and playing until ... you get dragged into Zuul and the showdown — did you earn enough money? Will you be allowed any further or is it grovel in front of the bank manager time?

And this is what you've been striving towards for the past half an hour, the chance to get your employees mercilessly squashed beneath the jackbooted heel of oppression as they try and squirm into the building and finally reach the temple of Zuul. And what happens then? Well, you go up and up and up and ...

GHOSTBUSTERS

Ghostbusters is one of those "you've seen the film, now play the game" programs. What makes this game different, however, is that (a) it really *is* based on the film, and (b) it's worth playing.

The film plot centres on a couple of professors working at New York university in the department of paranormal research. The two spend many a happy day chasing ghosts and female students until the university, not unreasonably, decides that ghost-hunting doesn't rate very highly on its list of priorities and fires them.

Faced with the awful prospect of actually having to work for a living, they hit on an idea. Why not set themselves up in business as freelance paranormal disturbance investigators and exterminators? In a word, Ghostbusters.

And so to the game. Your task, as a ghost-busting franchise operator (a kind of Rent-an-exorcist), is to set about rounding up New York's spooks, spectres, ghouls and ghosts. Being an American game, you not only have to save the city from death by demon-infestation, you also have to make a fast buck in doing so.

At the beginning of the game, you're asked whether you have an account. The first time you play, enter NO and your bank will automatically advance you $10,000 to finance a franchise (I think I'm with the wrong bank). You'll need this money to buy the equipment used by ghostbusters everywhere: a car, a PK energy detector, an image intensifier to make it easier to see ghosts (you get a more visible sprite), ghost bait, a ghost vacuum and, of course, a marshmallow sensor. Well, you weren't seriously considering going ghost-busting without a marshmallow sensor, were you?

The well-heeled ghostbuster will buy a fast sports car and a portable laser confinement system, but you can't afford either until you've got a pretty healthy bank account. You're more likely to make do with the hearse used in the film and common-or-garden ghost traps at first. The game itself is straightforward.

It all started the day a pretty girl opened her ice-box (fridge to you) and discovered the Kingdom of Zuul inside. And all the exiled inhabitants of that supernatural world took it as an invite for a big get-together and started floating towards the Big Apple to get into the fridge. As I say, all quite straightforward.

So now New York's parakinetic (PK) energy level is rising relentlessly and there's nothing you can do to stop it, but (luckily for New York) you can slow it up if you play your cards right. This might seem selfless and virtuous, but we know and you know you're not about to go to all the hassle of rescuing New York from Zuul just for the hell of it: you want to do your bank balance a bit of a favour too. And the beauty of it is that if you make enough money then *New York is saved as well!* Isn't life wonderful? Well, enough theorising, and on with the hard facts.

Having chosen your vehicle and equipment, according to your financial situation (sorry to keep on about it but you want to know what it's about, don't you?) you cruise around for a few blocks to the accompaniment of Ray Parker Junior's Ghostbusters tune which you might enjoy at this stage (it's a nice tune nicely played), but after a few games you'll find yourself afraid to turn on the radio for fear of hearing it.

When a building is having problems of the paranormal kind it raises the alarm and flashes red on your bird's eye view of a few blocks of New York. You're in business! Race round to the front door, press the joystick and the scene changes to the front-of-house facade with the spook in question floating provocatively above your head. Position your ghost trap



"All you have to do is stop the 100ft Marshmallow Man from getting in the fridge."

underneath and your two ghostbusters on either side and wait until said spook is directly over the trap. A full blast with your doing-away-with-ghosts power-pack should make it drop neatly into the trap and add a few noughts to you credit rating, which is, of course, the bit that interests you. But things can go badly wrong — for instance, if your two laser beams cross then your men end up flat on their backs, but worse, far worse, is what happens if you use up all the energy in your power-packs without hitting the ghosts. This leaves you defenceless and a sitting duck for the ghost who slimes you in revenge (not a pretty sight). Well, either way, after this little bust-up you get back out on those streets to look for more trouble.

If only it were so simple! As you're coasting around savouring the view there are loads of sprites, sorry, spirits in the air all drifting towards Zuul for that get-together. And since the PK level accelerates for every one that arrives there, you'd better make sure they don't make it. And there's a lock and key floating around which must not come together at Zuul, or New York as we know it (well, some of you might) is done for. Which may be no bad thing. Still, onwards. By running over the drifters you can keep the PK level in check and slow up the lock and key, thus buying time in which to make aforementioned fast buck before it's too late.

It's too late when the PK level reaches 999 and you've got less money than you started with. As if all that wasn't enough, after the PK level gets about half way to disaster level you get a marshmallow alert! A marshmallow alert, for the uninitiated, is when all the drifters suddenly transmogrify into a 100ft Stapuft Marshmallow Man personifying the Force of Evil, stomping through the city wreaking havoc and destruction wherever he treads, and guess who has to foot the bill for all the havoc and destruction? So, you've got to kill him off pretty quick or your career is in ruins. If you're fast enough you can stop him forming in the first place, but I mean *fast.* The moment the alert flashes, press the B key with your ultra-finely-tuned reflexes and the drifters don't get a chance to gel, but for most mortal plebs it's only humanly possible if you get a friend to do it.

Assuming you've amassed more money than you started with by the time the city's PK level reaches 999, you're admitted to level 2 in which you are standing outside the gates of Zuul itself and would enter at once if only that Stapuft Marshmallow Man wasn't bouncing around outside threatening to trample you to death. User-friendly he's not. You have to choose your moment to make a dash for it just as he's suspended in mid-air, which sounds simple enough, but you're likely to spend more time on this than on all those money-grabbing exploits put together.

Well, once inside, you're in the heart of the kingdom of Zuul, which you will remember is in the pretty girl's ice-box (fridge to you), though not so as you'd notice, preparing to meet thy doom, and then... ■

Y64 DATACARD

NAME: GHOSTBUSTERS

SUPPLIER: ACTIVISION

PRICE: CASS. £10.99 DISK £19.99

TYPE OF GAME: ARCADE

MEDIA: CASSETTE AND DISK

REVIEW COPY OBTAINED FROM: ACTIVISION 01-486 7588

COMMODORE CLUB

LOGIC 3

BUMPER 20 PAGE ISSUE
CHRISTMAS COMPETITION!

BRITAIN'S No.1 SOFTWARE CLUB

WINTER ISSUE 1984/85

WIN A DISK DRIVE

Christmas Competition

1st prize: ZX Microdrive & ZX Interface 1 (worth over £70)

2nd prize: Currah µSpeech Synthesizer (worth £29.90)

10 runner up prizes of free games software (each worth over £10)

The 1541 is undoubtedly the ultimate Commodore 64 add-on allowing programs and data to be quickly saved and recalled.

The 1541 also allows the 64 user to use professional application programs like Microsoft's "Multiplan" and Precision Software's Superbase.

A 1541 Disk Drive is the First Prize in our Christmas Competition. All you have to do is to carefully read the product reviews in this issue of the Commodore club catalogue, then answer the questions in our quiz.

First Prize will go to the first correct entry drawn on 31st January, 10 prizes of FREE Commodore Software will go to the runners up.



CLUB SUCCESS

The Logic 3 Commodore Club was launched in September, 1984 and has been an outstanding success. The rapid growth of the Club has kept Logic 3's staff working seven days a week just to keep up with demand.
Tony Toller, Logic 3's managing director and coordinator of the Club, explains its success as follows: "With other clubs once a person has joined there is no more reason for the club to try to support its members who each month *have* to purchase a certain number of products from a short list. Our Club is different. Members have no obligation to purchase *any* products from the club so the pressure is on us to choose only the best quality products and offer the best possible prices. We also take a lot of pride in publishing independent reviews on all the products we carry and if we do not like something about a product we are not afraid so say so."
Tony Toller's policy of offering club members a real service rather than just running "yet another mail order business" is winning new members all the time. But size by itself is not the main objective "as we grow so we will be able to improve our service to members still further and perhaps, one day, develop the club catalogue into a proper magazine." With the Christmas edition of the catalogue already running at a bumber 20 pages containing reviews of more than 180 products that day may come quite soon!

INSIDE

★ **APPLICATIONS**
A selection of the most effective application programs available.

★ **GAMES**
The best games for the Commodore selected by our own review panel and rated according to: graphics, sound, colour, originality and interest.

★ **PROGRAMMING**
The 'Learn BASIC' tutorials really show you how to write structured programs in easy to understand stages.

★ **UTILITIES**
Compose your own music.

★ **HARDWARE**
Some good deals in hardware and peripherals.

LOGIC 3's SOFTWARE PANEL

Neil Atkinson, pupil of Sir William Borlase School, spends his weekends in a shop selling home computer software, intends to work as a journalist.

Andrew Goltz, director of Logic 3, spent 6 years with Commodore's UK and International Division, instigated Commodore's 'Approved Product' scheme for third party software.

Bliss Healey, graduate of London School of Economics, has translated business software into French, currently working on the design of graphics for educational software.

Tony Toller, director of Logic 3, former journalist, specialist in business applications on Micros and co-ordinator of Logic 3's software club.

ARCADE

We open the Logic 3 winter catalogue with our selection of Arcade games. Of the thousands of such programs now available for the Commodore, these 50 must seem like the tip of the iceberg, yet even with unlimited space we wouldn't add many more. Certainly, there are some brilliantly packaged and highly advertised games around—but you won't necessarily see them here—we've looked at most and chosen only the best. Some of our selections are "classics", innovative in their time and still topping the ratings today. Others we've chosen because they've added a new dimension to the "arcade" game, or simply because they raise the level of excitement or challenge to a new plateau. Whichever game you choose from this list, you will not be disappointed.

Ancipital



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Llamasoft

Price: £7.50 **Club price: £6.00**

The Ancipital, half-man half-goat, is trapped inside a 100 room grid. The rooms are laid out in a 10x10 square and you must defeat wave after wave of different aliens to escape from the grid. All the rooms in the grid are interconnected, and fast reflexes are required to move from room to room. Due to the weird gravity in the grid you can walk on any side of the room, and even walk upside down on the ceiling! The figure of the Ancipital is about 1.5 cms. high and resembles a very hairy man with horns. As you work your way through the grid (a map is provided), look out for the six Camel Keys and the five Goats of Power.
A fast and addictive game, which maintains Llamasoft's reputation for fast arcade action with good graphics and sound.

Ratings: /10
Graphics: 6 **Sound:** 7 **Colour:** 7
Originality: 7 **Interest:** 7 **Order code:** ANCIP

Aztec Challenge



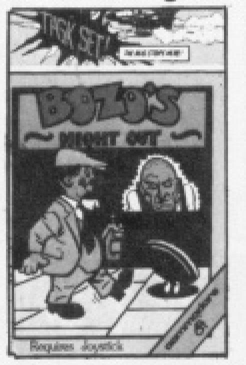
Loading: Turbo load
Joystick: Essential
Category: Arcade
Publisher: Cosmi

Price: £8.95 (tape) £12.95 (disk)
Club price: £7.60 (tape) **11.45** (disk)

An outstanding original game from Cosmi, featuring great graphics and synthesized sound. The graphics are as smooth as a film cartoon and the sound complements the action.
Every year the Aztec priests sacrifice luckless victims to their gods. This year you are one. You must compete in an endurance and obstacle course of skill and daring to prove your worth.
Terrific, sets a new standard for arcade games on the 64.

Ratings: /10
Graphics: 10 **Sound:** 10 **Colour:** 10
Originality: 10 **Interest:** 10 **Tape order code:** AZTCH **Disk order code:** AZTCH-D

Bozo's Night Out



Loading: Ultra fast load
Joystick: Essential
Category: Arcade/Adventure
Publisher: Taskset

Price: £6.90 (tape) 9.95 (tape)
Club price: £5.90 (tape) **8.45** (disk)

Bozo, having drunk too many pints of beer has to get back home from his friendly local, alas the normally straightforward journey has suddenly become treacherous. Great cartoon-style animation, smooth scrolling background and good arrangements of well-known drinking tunes.

Ratings: /10
Graphics: 9 **Sound:** 10 **Colour:** 10
Originality: 10 **Interest:** 9 **Tape order code:** BOZO **Disk order code:** BOZO-D

Bruce Lee



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: US Gold/Datasoft

Price: £9.95 (tape) £14.95 (disk)
Club price: £7.95 (tape) **£12.95** (disk)

An amazing game with smooth cartoon style animation. You guide Bruce Lee around the 21 secret chambers of the Evil Wizard's castle. Here you confront many obstacles in your search for his riches. The wizard has a formidable set of bodyguards, including "Ninja" brandishing broken sticks, and the even more deadly "Great Yammo". You can only defend yourself against these foes by using your skill at the martial arts. You can run, kick, chop, leap, jump, climb and jump to defeat your opponent.
A very enjoyable game with outstanding joystick control and super smooth cartoon animation. Recommended.

Ratings: /10
Graphics: 9 **Sound:** 8 **Colour:** 8
Originality: 10 **Interest:** 8 **Tape order code:** BRULE **Disk order code:** BRULE-D

Chartbuster



Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: Alligata

BONUS £6.95 PRICE

Price: £9.95 **Club price: £8.45**

We have previously reviewed "Blagger" from Alligata and although this title is now dropped from their range the publishers have included it in the "Chartbuster" tape—a compilation of five different games all in one cassette.
The other titles on this tape are "Killer Watt", "Eagle Empire", "Panic Planet" and "Bug Blaster". Although these are less well known, we feel that this tape represents excellent value for money, expecially at the 'Bonus Price' as you're effectively getting each title for £1.39! there's nothing cheaper in our catalogue.

Order code: CHART

> **IMPORTANT**
> *The prices in this catalogue take effect from 1st December 1984. All previous catalogues and price lists are now superceded. Logic 3 reserve the right to alter prices without notice.*

Chinese Juggler



Joystick: Essential
Category: Arcade
Publisher: Ocean

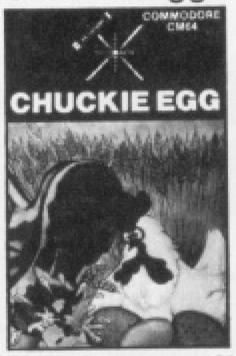
BONUS £3.45 PRICE

Price: £6.95 **Club price: £5.45**

An extraordinary game—the result of a national competition run on Hungarian TV—Chinese Juggler has superb "strip-cartoon" style graphics and is unlike any game you have played before. As the Juggler you must keep 8 plates spinning on poles, simultaneously. This requires skill, judgement and good timing. Approach the table, pick up a plate, then go to the rod and spin the plate. When you have all eight plates up and spinning, you move on to another screen, where the spinning is harder.
A great game for all the family.

Ratings: /10
Graphics: 10 **Sound:** 9 **Colour:** 9
Originality: 10 **Interest:** 10 **Order code:** CHIJU

Chuckie Egg



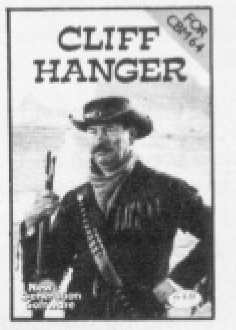
Loading: Fast load
Joystick: Optional
Category: Arcade
Publisher: A + F Software

Price: £7.90 **Club price: £6.50**

Guide Hen House Harry around the Hen House, pick up a dozen eggs and collect as much corn as you can without being pecked to death by the Ducklings. Watch out for Mother Duck, when she's let loose on level 9.
A BBC favourite now available for the Commodore 64.

Ratings: /10
Graphics: 7 **Sound:** 7 **Colour:** 8
Originality: 8 **Interest:** 8 **Order code:** CHU64

Cliff Hanger



Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: New Generation Software

Price: £7.95 **Club price: £6.75**

You are Cliff Hanger, the star of the show! Your job is to stop the dastardly 'El Bandito' from shooting up the canyon!
This game is a cross between Lone Ranger and Roadrunner. In a series of over 40 cartoon episodes you have to use your wits and ingenuity to stop the desperado: roll boulders off the cliff, drop anvils, lob bombs, chuck a boomerang and much much more! Cliff Hanger is an amusing game that should appeal to younger players and has a two-player option.

Ratings: /10
Graphics: 6 **Sound:** 5 **Colour:** 7
Originality: 7 **Interest:** 6 **Order code:** CLIHA

Cosmic Convoy



Joystick: Essential
Category: Arcade
Publisher: Taskset

BONUS £3.45 PRICE

Price: £6.95 **Club price: £5.25**

Planets in the system Coman are dying, and millions of people need supplies urgently. A relief convoy is in orbit around Com-Alpha and you must ensure that the convoy reaches the planet with the supplies. Under your command is a squadron of H-Vips each of which

has a stab laser to destroy the enemy. An arcade classic with a good opening sequence to set the mood for the rest of the game.

Ratings: /10

Graphics: 9 **Originality:** 9
Sound: 9 **Interest:** 8
Colour: 7 **Order code:** COSCO

BONUS PRICE

If you are applying to join our Club, you may take up to five titles at the 'Bonus Price', and as many as you wish at the 'Club Price'. This offer applies during your first 60 days membership. Thereafter you may take one item at the 'Bonus Price' provided you order three further products at the 'Club Price'.

Encounter



Joystick: Essential
Category: Arcade
Publisher: Novagen

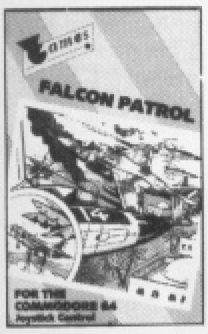
Price: £9.95 (tape) 12.95 (disk)
Club price: £8.45 (tape) **£11.45** (disk)

A fast action game in 3 Dimensions. Leaving your mother ship you set off in a small probe to explore the planet below. Suddenly you are under attack! The encounter has begun!
The saucer that is attacking is shown on your instruments as your tracking computer plots its position.
Encounter is a game that will have arcade-game lovers riveted to their screens. Super smooth, fast scrolling graphics and high quality sound, as you dodge missiles and try to blast alien saucers, give a great feeling of involvement. High-speed combat at its most exciting! Highly recommended.

Ratings: /10

Graphics: 10 **Originality:** 9
Sound: 9 **Interest:** 10
Colour: 9 **Tape order code:** ENCOU
Disk order code: ENCOU-D

Falcon Patrol



Joystick: Essential
Category: Arcade
Publisher: Virgin

BONUS £3.95 PRICE

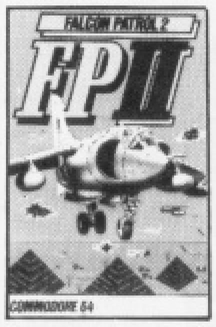
Price: £6.95 **Club price: £5.55**

A sole survivor of the Falcon Patrol you must try and stop the attacking jets from destroying your oil installation and refuelling bases. Your VTOL jet is armed with 100 anti-aircraft missiles and a very sophisticated radar system, showing your refuelling and re-arming bases, together with any enemy aircraft in the vicinity.
An aerial dogfight which has to be seen to be believed!

Ratings: /10

Graphics: 8 **Originality:** 9
Sound: 7 **Interest:** 9
Colour: 8 **Order code:** FALPA

Falcon Patrol 2



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Virgin Games

Price: £7.95 **Club price: £6.75**

If you thought Falcon Patrol was good, you will be impressed by the sound and graphics effects of Falcon Patrol 2.
After the inconclusive result of the last battle, the enemy is out to crush the small, battered town once and for all.
As pilot of a vertical take off Falcon jet, you are the town's only hope of survival. The enemy have rearmed themselves with a solo, gunship, and transport helicopters, air-to-air and ground-to-air missiles, "flak" batteries, and radar jammers.
A superb game with 16 levels of increasing difficulty, incredible 3D graphics, and very realistic sound effects.... .. recommended.

Ratings: /10.

Graphics: 8 **Originality:** 8
Sound: 9 **Interest:** 8
Colour: 9 **Order code:** FALP2

Fire Quest



Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: The Edge

Price: £9.95 **Club price: £8.45**

A seven part game in which you guide Ugh on his quest for fire. The first challenge involves viscious giant spiders who are intent on stopping Ugh reaching a swinging rope at the top of the screen. By swapping ropes Ugh makes it across the deep ravine and up to the volcano. Then, Ugh builds a fire avoiding the fireballs as he collects the wood. Next Ugh tries to collect the flame from the volcano without being killed by the earthquakes! Four more screens of action and danger, quality graphics and sound make this prehistoric "Hunchback" a good buy.

Ratings: /10

Graphics: 8 **Originality:** 9
Sound: 8 **Interest:** 7
Colour: 7 **Order code:** FIREQ

Flak



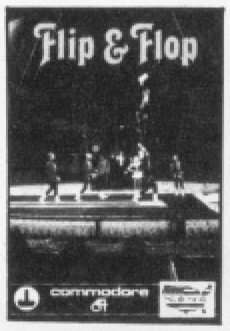
Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: US Gold/Funsoft

Price: £9.95 (tape) £14.95 (disk)
Club price: £7.95 (tape) **£12.95** (disk)

You view your AGX hypersonic fighter from above and pilot it on a mission to the computer control centre. The centre is after total control of the Earth. Guarding the Centre are flak batteries, which can fire from any direction. You are armed with air to ground missiles and with these you must first destroy the flak batteries and then the Control Centre.
Good smooth screen scrolling.

Ratings: /10 **Originality:** 6
Graphics: 5 **Interest:** 6
Sound: 5 **Tape order code:** FLAK
Colour: 6 **Disk order code:** FLAK-D

Flip & Flop



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Statesoft/ First Star

Price: £8.95 **Club price: £7.60**

Help Flip the kangaroo and Mitch the monkey escape from a futuristic zoo and get back to their friends in the circus. This is a technically polished game requiring co-ordination and fast responses. Make Flip hop from platform to platform on a floating multi-level 3D grid and then, as the whole screen turns upside down and the perspective flips into reverse, swing Mitch around the bottom of the platforms as both animals try to escape the Zookeeper and his flying net.
This is a vast game 36(!) different levels and animated intermissions for one or two players.

Ratings: /10

Graphics: 8 **Originality:** 8
Sound: 7 **Interest:** 7
Colour: 8 **Order code:** FLIFL

Fort Apocalypse



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Synsoft

BONUS £6.45 PRICE

Price: £9.95 **Club price: £7.95**

A fast action arcade game that demands great joystick skill. You pilot a jetcopter and your mission is to rescue your 18 friends trapped in the deadly caverns. First you must combat the enemy tanks armed with tracker-missiles, and robo-choppers controlled by computers. To gain access to the caverns you must blast your way through the surface access doors. Beware the hyper and laser chambers! A superb game with well defined graphics, realistic sound, plus randomly placed dangers so that the game is always new. Very addictive.

Ratings: /10

Graphics: 8 **Originality:** 9
Sound: 8 **Interest:** 8
Colour: 8 **Order code:** FORAP

Ghostbusters



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Activision

Price: £10.90 **Club price: £9.25**

The smash-hit film and theme tune combined to make an outstanding game. A city is being spooked by some freaky phantoms.
To deal with them you set up a Ghostbuster franchise. After having been lent £10,000 by the bank you are given a choice of four Ghostbusting vehicles. You can have a "Compact" at £2,000, a hearse at £48,000, a station wagon at £6,000, or a high performance car at £15,000. Each car has different performance characteristics. The next three screens are concerned with your choice of equipment. This includes a PK energy detector, image intensifier and marshmallow sensor,a ghost vacuum, for sucking up roaming ghosts, ghost traps, for actually trapping ghosts.You are now equipped for ghost busting. On the map screen you see a chart of the city, showing all the buildings, ghosts etc. around. Buildings that are flashing red are being haunted. Take your car to one of these, press fire and you then see the street journey from your last position to your present location. You drive your car along the road sucking up ghosts with the ghost vacuum.
Once at the building you get out of your vehicle and place a trap in the centre of the screen. Then you call out a fellow Ghostbuster, and standing on opposing sides of the screen, turn on your backpacks. From them comes an energy stream that you use to chase the ghost into the trap. If you succeed, carry the trap back to the car and you're off to another tricky Ghostbusting screen.
Amazing sound, (including speech) and excellent graphics. Very original.

Ratings: /10

Graphics: 8 **Originality:** 9
Sound: 10 **Interest:** 9
Colour: 9 **Order code:** GHOST

Glug Glug



Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: CRL

Price: £7.95 **Club price: £6.75**

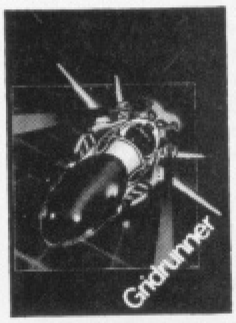
A perilous underwater animation: you are a fearless deep sea diver on a mission to collect treasure from the sea bed.
The sea creatures are none too pleased about this invasion of their privacy. The hostile Piranhas, jellyfish, giant squids, killer crabs, fighting fish and hunter sharks are after you!
Your only defence against these enemies is your dart gun. As you dive from the surface to the bottom of the sea you must be careful that the sharks do not eat through your air pipe that is connected to the boat. If you should come into contact with any of the sealife... well it's goodbye and Glug Glug!
An enjoyable game, with six different skill levels, from the deadly slow 'yawn' level to the super fast 'suicide' level.

Ratings: /10
Graphics: 7 **Originality:** 8
Sound: 6 **Interest:** 6
Colour: 7 **Order code:** GLUGL

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Gridrunner



Joystick: Essential
Category: Arcadey
Publisher: Llamasoft

BONUS £2.95 PRICE

Price: £4.95 **Club price: £3.75**

The earth's Power Grid is being tapped by a force of alien Droids who are using the energy to replicate themselves. You command The Gridrunner, a fast and highly manouevrable combat ship equipped with a laser cannon. If you use all your skill and experience you will be able to clear the grid of Droids. But watch out, the next attack wave comprises Droids that are more powerful and intelligent than those that came before...

Ratings: /10
Graphics: 7 **Originality:** 5
Sound: 6 **Interest:** 7
Colour: 7 **Order code:** GRR64

Gyropod



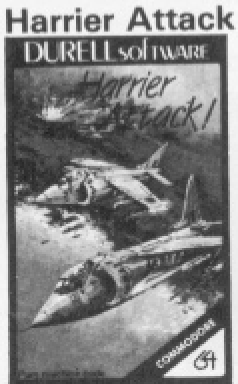
Joystick: Essential
Category: Arcade
Publisher: Taskset

Price: £6.90 (tape) £9.95 (disk)
Club price: £5.55 (tape) **8.45** (disk)

Outstanding graphics accompanied by good music and sound effects. As commander of the Galaxy Ranger you must seek out and then destroy every planet in the alien system. Plunder the planets before you destroy them to replace your ammunition.
A game demanding skill and fast reflexes.

Ratings: /10
Graphics: 9 **Originality:** 7
Sound: 8 **Interest:** 7
Colour: 8 **Tape order code:** GYROP
Disk order code: GYROP-D

Harrier Attack



Machine: Commodore 64
Joystick: No
Category: Arcade
Publisher: Durell Software

BONUS £3.95 PRICE

Price: £6.95 **Club price: £5.95**

As you take off from your aircraft carrier you realise that you are on your own. Your task is to destroy the enemy's defences. You are armed with bombs and rockets. As you fly over the enemy island your plane is damaged by anti aircraft fire—but if you eject you may just survive for another mission!

Ratings: /10
Graphics: 7 **Originality:** 7
Sound: 6 **Interest:** 7
Colour: 7 **Order code:** HARAT

Havoc

Machine: Commodore 64
Category: Arcade
Joystick: Essential
Publisher: Dynavision



Price: £9.99 **Club price: £8.45**

You are a pilot in the world peace force, on a mission to rescue the world from total destruction.
You must launch your aircraft and intercept incoming missiles, penetrate hostile enemy territory, and destroy the missile launch site. The enemy territory is in the form of a spectacular 3D tunnel, that is well armed and very tricky to negotiate. The missiles are guided along this tunnel by the enemy and each one that you allow past you destroys ten percent of your homeland. Smart bombs and magnetic bombs blow you off course. You must also negotiate the obstacles blocking the tunnel, such as walls with only very small apertures in them.
Smooth scrolling arcade fun.

Ratings: /10
Graphics: 8 **Originality:** 4
Sound: 8 **Interest:** 7
Colour: 7 **Order code:** HAVOC

Hexpert



Joystick: Optional
Category: Arcade
Publisher: Anirog

Price: £7.95 **Club price: £5.95**

Bert is a small, charming and furry creature who used to live on a far away planet. He has been captured by the evil witch, Zoganaar, who forces him to play on her games pyramid. Bert has to change the top faces of each pyramid slab by jumping from one block to another, whilst Zoganaar throws rubber balls at him and unleashes her pet snake to devour him. His only chance of survival is to jump on the spinning discs, thus luring the snake to its death. When all the surfaces are painted he has to start all over again. But each time the wicked witch gets angrier, trying even harder to stop him.
A good family game.

Ratings: /10
Graphics: 7 **Originality:** 7
Sound: 6 **Interest:** 7
Colour: 7 **Order code:** HEXPE

High Noon



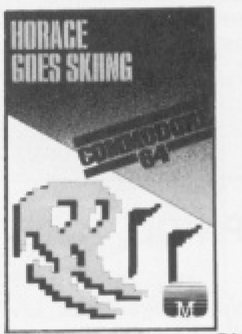
Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Ocean

Price: £6.90 **Club price: £5.85**

A shootout in the Wild West, where the rules of survival are: shoot first... ask questions later. In the small town you, as sherriff, must protect the citizens from the bandits. Unless you stop them the bandits will rob the bank, or raid Saucy Sue's bar taking the girls as hostages. In later screens there are more bandits, sometimes on horseback, sometimes armed with dynamite. Riga Mortis the undertaker attends to corpses, taking them off to the undertakers. Eventually, you may trace the bandits to their cave where you face the final showdown.
A really amusing game, with superb graphics and sound.

Ratings: /10
Graphics: 8 **Originality:** 9
Sound: 8 **Interest:** 7
Colour: 8 **Order code:** HIGNO

Horace Goes Skiing



Loading: Ultra fast load
Joystick: Optional
Category: Arcade
Publisher: Melbourne House

Price: £5.95 **Club price: £4.95**

Horace wants to go skiing, but before he can, he must rent his skis. Not too hard? Well, the hut is on the other side of a busy road, full of lorries, cars and kamikaze motor-cyclists. Horace has $40 to spend. Ambulance fees are $10 if he gets knocked over, and ski hire is also $10. Once he gets the skis he must cross the road again!
Now he can go skiing. At the ski slope you need considerable skill to guide Horace down the run, avoiding trees and staying between the flags, wherever possible. If you hit a tree and break the skis Horace must cross the highway again to rent another pair.
Two games in one, both very smooth, cartoon animation.
Excellent family fun.

Ratings: /10
Graphics: 8 **Originality:** 8
Sound: 6 **Interest:** 9
Colour: 7 **Order code:** HGS

Hover Bovver



Joystick: Essential
Category: Arcade
Publisher: Llamasoft

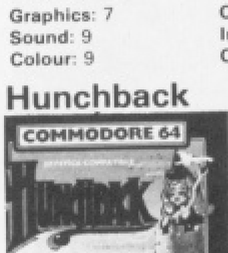
BONUS £2.95 PRICE

Price: £7.50 **Club price: £5.65**

Jim's cylinder mower has broken down. Deciding to borrow his neighbour's 'Air-mo', he takes it without telling them. When he is happily mowing his lawn, the neighbour sees him and tries to retrieve it. Jim must try to complete the job whilst trying not to annoy his dog Rover, and avoiding his neighbour.
A totally original arcade-type game from Jeff Minter, the man with a cult following amongst arcade fans.

Ratings: /10
Graphics: 7 **Originality:** 10
Sound: 9 **Interest:** 9
Colour: 9 **Order code:** HOVBO

Hunchback



Joystick: Optional
Category: Arcade
Publisher: Ocean

Price: £6.95 **Club price: £5.25**

Quasimodo must rescue the

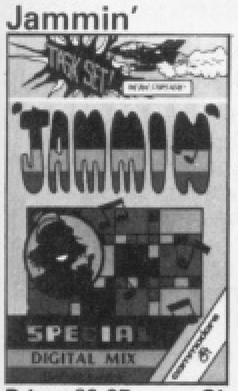
 ★ **New Members—you can take up to five titles at the 'Bonus Price'**

imprisoned Esmeralda from the castle stronghold. Jump along the ramparts, swing over the fiery pits, dodge the arrows and fireballs and remember to keep ahead of the chasing knight.
15 screens of fun and excitement, each one more difficult than the last.

Ratings: /10

Graphics: 8	Originality: 9
Sound: 8	Interest: 8
Colour: 7	Order code: HUN64

Jammin'



Joystick: Optional
Category: Arcade
Publisher: Taskset



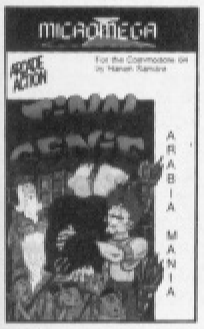
Price: £6.95 **Club price: £5.45**

You must guide Rockin' Rodney through the top 20 and build up his band. Trying to stop you are the Bum Notes—Dischord and Rodney's arch enemy, Distortion. Yet again a superbly original concept from Taskset beautifully implemented on the Commodore 64 and making full use of its sophisticated sound facilities. It features an interactive rock sound track with second harmonies as Rodney gets 'The Band' together.

Ratings: /10

Graphics: 8	Originality: 10
Sound: 10	Interest: 9
Colour: 8	Order code: JAMIN

Jinn Genie



Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: Micromega

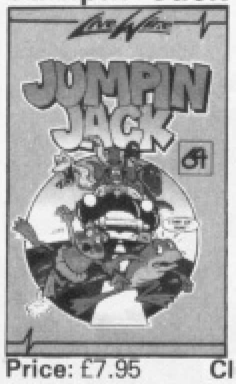
Price: £8.95 **Club price: £7.60**

An exciting arcade game set in the heart of Arabia. The Golden City has been taken over by the evil Ifreet. He has placed magical guards to protect the city approaches, to defend the palace courtyard, and to keep the passageways in darkness. Ifreet lives in the Inner Sanctum, where he keeps the wise man behind bars.
As the only hero available, you are chosen to go to the palace, defeat Ifreet and rescue the wise man. Armed only with an old flying carpet and a little magic you set off. To approach the city you fly on your carpet, avoiding, and where possible destroying, the magical guards. Once at the city you must locate the temple, scale the courtyard walls, find an open window, then enter the passageways to light all the torches and find the magic jar. If you make it to the Inner Sanctum you must free the old man, and try to capture Ifreet in the jar. If you succeed you are off to a different city to battle with a more skilful Ifreet.
Good graphics and sound, with very smooth scrolling.

Ratings: /10

Graphics: 8	Originality: 9
Sound: 8	Interest: 8
Colour: 8	Order code: JINGE

Jumpin' Jack



Joystick: Optional
Category: Arcade
Publisher: Livewire

Price: £7.95 **Club price: £5.95**

Jumpin' Jack (frog) has just had a night out with the Newts! In an endeavour to get home to his pond leaf he must cross a road whilst avoiding the traffic. As if this is not enough he must then cross a river by jumping on logs and turtles. If he fails to get home in the allotted time then he must start again from scratch

Ratings: /10

Graphics: 9	Originality: 8
Sound: 9	Interest: 8
Colour: 10	Order code: JUMJA

Kong



Joystick: Optional
Category: Arcade
Publisher: Anirog

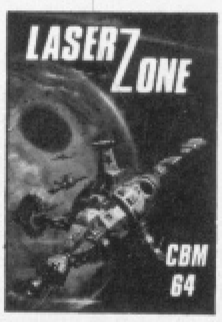
Price: £7.95 **Club price: £5.95**

That very special lady in your life, Fay Ray, has been abducted by the evil Kong. You have to cross 4 screenplays to rescue her from Kong's clutches.
This 32K masterpiece emulates Donkey Kong from the arcades.It is certainly the biggest and best version available for the Commodore 64.

Ratings: /10

Graphics: 7	Originality: 8
Sound: 4	Interest: 8
Colour: 7	Order code: KONG

Lazer Zone



Joystick: Essential
Category: Arcade
Publisher: Llamasoft



Price: £7.50 **Club price: £5.75**

The evil Empire of Irata is attacking Terran outposts. Your task is to defend the Federation with the assistance of two laser cannon batteries. Lazer Zone features the simultaneous control of two Plasma Cannon, 'smart bombs', and a Countdown Wave Indicator. Another totally original game from Jeff Minter at Llamasoft.

Ratings: /10

Graphics: 7	Originality: 8
Sound: 7	Interest: 7
Colour: 6	Order code: LAZ64

Lazy Jones



Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: Terminal Software

Price: £7.95 **Club price: £6.75**

A high quality, real value for money cassette (there are 18 arcade games to play). Lazy Jones is the laziest person that you will ever meet! His only aims in life are to avoid work at all costs and to master the arcade games that are in each room of the hotel where he works.
The 18 rooms of the hotel are on three levels connected by a lift. In the main screen you see the door to each of the rooms, the lift in the centre of the screen, and on each floor someone or something waiting to catch Lazy Jones. You must guide Lazy Jones into each room, where he will find a large TV screen and a joystick. Then you take over from Jones and start playing the arcade game. There is a time limit to each game, and when it is finished Jones leaves the room and ventures out into the corridor.
The graphics are very impressive, and the sound is amazing . . . an excellent value package that will keep you playing for along time. Recommended.

Ratings: /10

Graphics: 9	Originality: 9
Sound: 10	Interest: 9
Colour: 9	Order code: LAZJO

Loco



Loading: Quick load
Joystick: Optional
Category: Arcade
Publisher: Alligata



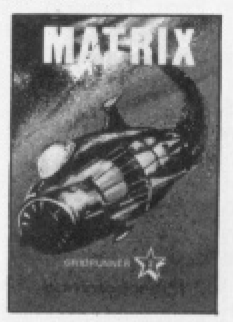
Price: £7.95 **Club price: £6.65**

Your chance to be an engine driver, but this is no ordinary railroad—you must manoeuvre your steam engine along the tracks, avoiding runaway wagons and fighting off an air attack!
Great fun for all the family, this game features great split-screen graphics and a toe-tapping sound track.

Ratings: /10

Graphics: 9	Originality: 10
Sound: 10	Interest: 10
Colour: 10	Order code: LOCO

Matrix



Joystick: Essential
Category: Arcade
Publisher: Llamasoft



Price: £7.50 **Club price: £5.55**

It is ten years since the infamous Grid Wars and you are one of the few survivors of those early grid squadrons. But the aliens are back, and they have superior weapons and tactics! However, you too have the latest fighter with improved firepower and manouevrability. The enemy's recruits include droids, cosmic cameloids, deflexors, diagonal waves, zappers and the snitch. You need all your skill and experience to clear earth's atmosphere, enter grid one (of twenty) and pepare for battle.

Ratings: /10

Graphics: 8	Originality: 9
Sound: 6	Interest: 8
Colour: 8	Order code: MAT64

Mr. Robot and his Robot Factory



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Beyond

Price: £8.95 **Club price: £7.60**

A classic platform game from Datamost now published in this country by Beyond.
Guide Mr. Robot through 22 different screens full of different traps and obstacles. Avoid the alien fire, and collect all the power pills. There are twenty two different skill levels to choose from and also a brilliant idea—the facility to construct your own factory. Create your own ladders, lifts, escalators, poles, trampolines and treadmills.
A good action-platform game with the possibility of an infinite number of different screens!

Ratings: /10

Graphics: 7	Originality: 9
Sound: 7	Interest: 8
Colour: 7	Order code: MRROB

Pitfall II



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Activision

Price: £9.95 **Club price: £8.45**

An excellent multi-screen arcade game, in which you guide Pitfall

Harry around the Lost Caverns of Machu Picchu in Peru. Through these caverns flows the unchartered tributary of the Urabamba River, with many waterfalls and deadly electric eels. It is in these caverns that you have foolishly undertaken to find the legendary, cursed Raj Diamond and the gold bars recently stolen from Fort Knox. How will you fare against the poisonous frogs, scorpions, and the dreaded Andean condor and the many other nasties?
A great arcade game that will keep its appeal for a long time. Recommended.

Ratings: /10
Graphics: 9 Originality: 8
Sound: 8 Interest: 8
Colour: 7 Order code: PIT2

Poster Paster



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Taskset

Price: £6.90 (tape) £9.95 (disk)
Club price: £5.85 (tape) **£8.45** (disk)

Another original arcade game from Taskset. Your job is to paste a poster on a billboard, the task is hindered by little creatures that run along the street taking your poster away from you. You can obliterate these creatures with a splatter of glue from you brush.
The poster is in six pieces and each one must be stuck on the board in the right order. You have a ladder to climb up, but you must position it correctly so that you don't drop the poster.

Ratings: /10
Graphics: 8 Originality: 8
Sound: 8 Interest: 7
Colour: 8 Tape order code: POSPA
Disk order Code: POSPA-D

Potty Pigeon



Joystick: Essential
Category: Arcade
Publisher: Gremlin Graphics

Price: £9.95 **Club price: £8.45**

Guide Percy, the potty pigeon, on a suicide mission in a desperate attempt to build a nest. Dive down onto the road, collect the ten nest building twigs from the path of the oncoming cars, and take them back to the nest. Splat the cars with eggs, avoid the kamikaze planes, balloons, the pigeon-eating cat and the starving ferret. To move onto other levels you must complete the nest.
Smooth super fast scrolling action, stunning graphics and creative music and sound effects. Highly recommended.

Ratings: /10
Graphics: 9 Originality: 9
Sound: 10 Interest: 9
Colour: 9 Order code: POTPI

Quintic Warrior



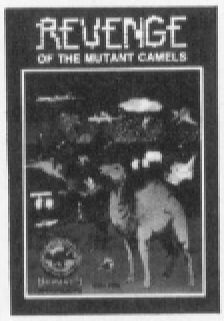
Joystick: Essential
Category: Arcade
Publisher: Quicksilva

Price: £7.95 **Club price: £5.95**

The Quintic Warrior is part man, part superman who has to fight alone against the crabmen and mutants who inhabit the Dome City sometime in the future.
To quote Quicksilva, "Quintic Warrior is an arcade mega-game fully using the Commodore 64's facilities". Need we say more!

Ratings: /10
Graphics: 7 Originality: 8
Sound: 7 Interest: 7
Colour: 7 Order code: QUIWA

Revenge of the Mutant Camels



Joystick: Essential
Category: Arcade
Publisher: Llamasoft

Price: £7.50 **Club price: £5.65**

Jeff Minter's sequel to 'Attack of the Mutant Camels!'—Revenge of the Mutant Camels puts you in control of a 90-foot high neutronium shielded, laser splitting death camel which leads the vanguard of a rebellion against the evil Zyaxian Overlords.
This incredible game has beautiful smooth-scrolling graphics and 42(!!) completely different attack waves, it kept our reviewer glued to his Commodore 64 for days.
One of Jeff Minter's best. Can you free the camels and reach that elusive 42nd level?

Ratings: /10
Graphics: 9 Originality: 10
Sound: 8 Interest: 9
Colour: 10 Order code: REVCA

River Raid



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Activision

Price: £9.95 **Club price: £8.45**

An exciting game in which you take the part of a pilot, flying over the "River of no Return" which is infested by enemy helicopters, and boats. On the bridges across the river are the tanks trying to knock you out of the sky. For maximum effect, blow up the bridge as they cross it. Your plane is equipped with missiles and you will come across fuel dumps floating in the river.
Good sound, very playable.

Ratings: /10
Graphics: 6 Originality: 6
Sound: 6 Interest: 6
Colour: 6 Order code: RIVRA

Rocket Roger



Machine: Commodore 64
Joystick: No
Category: Arcade
Publisher: Alligata

Price: £7.95 **Club price: £6.75**

Rocket Roger's space ship has run out of fuel, so he ventures outside to explore the dark, mysterious planet. Deep in the middle of the vast, unknown playing area lie 99 power crystals that will recharge his rocket and enable him to get home. However, the planet is inhabited with many "nasties", and guarded by security laser beams, force-fields and sliding doors.
Roger has a rocket-powered backpack, which can boost him in any direction at varying speeds.
Guide him above, around and between the treacherous terrain of the planet, to collect all the crystals. A good game with a large playing area that scrolls very smoothly.

Ratings: /10
Graphics: 7 Originality: 6
Sound: 7 Interest: 6
Colour: 7 Order code: ROCRO

Sheep in Space



Joystick: Essential
Category: Arcade
Publisher: Llamasoft

Price: £7.50 **Club price: £6.00**

Nothing sheepish about this game!!! Combining zany humour with ultra smooth, ultra fast graphics, 'Sheep in Space' is definitely among the top games for your 64.
Your objective is to prevent destruction of your planet by destroying the enemy who are intent on stealing the remains of your quickly dwindling planet's energy. Try to prevent a fatal build up of charge at the power booster.

Ratings: /10
Graphics: 9½ Originality: 10
Sound: 6 Interest: 8
Colour: 8 Order code: SIS

Space Pilot



Loading: Turbo load
Joystick: Optional
Category: Arcade
Publisher: Anirog

Price: £7.95 (tape) £9.95 (disk)
Club price: £6.35 (tape) **£8.45** (tape)

As you roam the sky you encounter squadrons of enemy fighters and over fifty individual planes, destroy them all for bonus points, and then move onto the next screens.
There are five screens in this game, from the biplanes of 1919 to space fighters of 2001.

Ratings: /10
Graphics: 8 Originality: 8
Sound: 7 Interest: 7
Colour: 8 Tape order code: SPAPI
Disk order code: SPAPI-D

Splat



Joystick: Optional
Category: Arcade
Publisher: Incentive

Price: £6.50 **Club price: £5.55**

Guide our hero, Zippy, through a treacherous maze, eating grass and flowers to gain as many points as possible.
However, this maze is no ordinary maze. It scrolls in four directions, trying to trap Zippy in a corner or Splat him against a wall.
An interesting game, that makes a welcome change from all the shooting games. Based on the ever popular maze format but with some *very* important changes.

Ratings: /10
Graphics: 8 Originality: 5
Sound: 6 Interest: 8
Colour: 7 Order code: SPLAT

Storm Warrior



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Front Runner

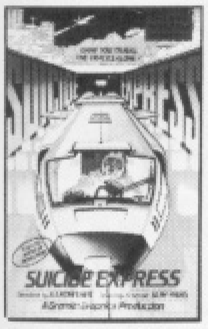
Price: £7.95 Disk: £9.95
Club price: £6.75 Disk: **£8.45**

Twelve screens of arcade action that can be played at 5 different levels. As Storm Warrior you must find and destroy the sacred skull that lies beyond the Light Barrier, across the ocean, deep in the caverns on the island of Doom. On the first 4 screens you make your way to the island fighting barbarians, Storm Birds, bats,

demons and falling rocks. On screens 5 to 12 you will find the Catacombs, the Chamber of Evil and the Sacred Skull. To reach these you must Penetrate the Antechamber, Chasm of Doom, the Fountains and the Tunnel of Death.
A hard and tough arcade game.

Ratings: /10
Graphics: 7 Sound: 7 Colour: 7
Originality: 7 Interest: 7
Tape Order code: STOWA
Disk Order Code: STOWA-D

Suicide Express



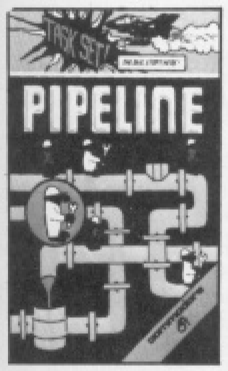
Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: Gremlin Graphics

Price: £7.95 **Club price: £6.35**

On the Suicide Express you really have your work cut out for you! You're at the controls of an armed nuclear train. Your mission: clear the planet of alien life making it safe for habitation and save the human race (no less!). Guiding your train along a network of tracks at a breakneck speed while avoiding oncoming traffic and replenishing your depleted ammo supplies are the least of your worries! Matters are further complicated by killer hovercraft, green bombers and the odd space ship—all hell bent on your destruction.
The lower part of the screen gives you a birds-eye view of the track and the top half gives you a side view of the action.
The detail, colour and perspective of the graphics are brilliant, but you'll be too busy to appreciate them fully. The music as the program loads is excellent and the machine-code synthesized voice that announces the beginning and end of the game and also tells you your score adds the final touch to an exciting and highly recommended game.

Ratings: /10
Graphics: 10 Sound: 10 Colour: 9
Originality: 9 Interest: 10
Order code: SUIEX

Super Pipeline



Joystick: Optional
Category: Arcade
Publisher: Taskset

BONUS £3.45 PRICE

Price: £6.95 **Club price: £5.25**

You are the pipeline engineer, aided by your trusty workmen your job is to keep the oil flowing. But the enemy has hired the Mad Plugger and his 6-legged Venusian Spiders to sabotage the pipeline. Descriptions cannot begin to do justice to the games from Taskset—they are totally original and use the powerful capabilities of the Commodore 64 in a complete 'state-of-the-art' manner. Many playing options and an all-time 'Hall of Fame" feature.

Ratings: /10
Graphics: 9 Sound: 9 Colour: 9
Originality: 9 Interest: 10
Order code: SUPPI

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Trashman



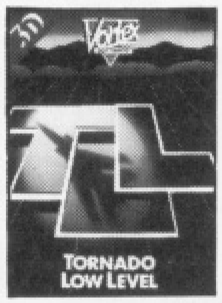
Joystick: Essential
Category: Arcade
Publisher: New Generation Software

Price: £7.95 **Club price: £6.75**

Your job application having been accepted, you start as Trashman by having to collect five dustbins, and then empty them into the waiting dustcart.
However, life is not easy. Your job is hampered by having to cross busy roads, collect from houses guarded by fierce dogs and the impatient driver of the dustcart.
A highly original game, with very impressive graphics, which are both smooth and lifelike. Highly recommended.

Ratings: /10
Graphics: 9 Sound: 8 Colour: 8
Originality: 10 Interest: 9
Order code: TRA64

Tornado Low Level



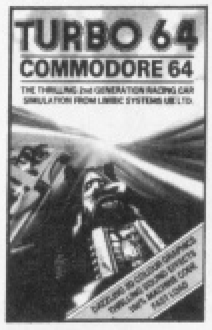
Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: Vortex

Price: £6.95 **Club price: £5.20**

Recently released by Vortex, another high quality 3D arcade game. Take off in your Tornado—accelerate, once in the air, swing the wings back and you're away. Your mission is to seek and destroy the enemy targets shown on your map. In reaching the targets, the lower you dare fly the more points you will gain. You may land to refuel and return to base, in order to fly a new mission. The graphics and scrolling on this game are very smooth and the scenery is 3D and very realistic. An excellent 'flying game' for the Commodore.

Ratings: /10
Graphics: 9 Sound: 7 Colour: 7
Originality: 9 Interest: 9
Order code: TLL64

Turbo 64



Machine: Commodore 64
Joystick: Optional
Category: Arcade/ Simulation
Publisher: Limbic Systems

Price: £7.95 **Club price: £6.45**

A realistic racing car simulation, with good 3D cockpit views of the road and surrounding countryside. Before play starts there are a number of options to choose: which race track (choice between two), gearchange (manual/automatic), number of players (1-8), and the number of laps that you wish to race.
On the starting grid you are given a 3 second countdown and then the green light shows and you're off!! To accelerate push the joystick forward, to brake pull it back, if using manual gearchange, you hold down the clutch (fire button) and push the joystick to the same position as you would in a real car. If you are using the keyboard the function keys are used to change gear.
In the cockpit of your Formula One car you have a speedo, rev counter, and gear change indicator.
Dazling 3D graphics and realistic sound effects add up to make this the most advanced driving simulation currently available on the 64. It's a pity there are no competing cars on the track, nevertheless highly recommended.

Ratings: /10
Graphics: 9 Sound: 9 Colour: 8
Originality: 7 Interest: 8
Order code: TUR64

Zaxxon



Machine: Commodore 64
Joystick: Essential
Category: Arcade
Publisher: Synsoft/US Gold

Price: £9.95 **Disk:** 14.95
Club price: £7.95 **Disk: 11.95**

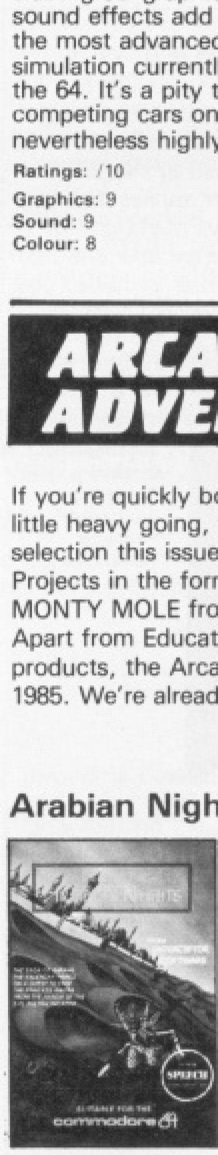
An arcade classic. You are at the controls of a space fighter, and your mission is to destroy the deadly Zaxxon robot. Before you can do this you must penetrate the heavily armed enemy Asteroid City. Your aim is to knock out as many radar towers, gun shipments and fuel dumps as possible... the better your score is here the easier the next stage, 'deep space', will be. Having negotiated the perilous Asteroid City, you will find yourself in deep space. Here you encounter the enemy fighters that survived the earlier battle as well as enemy tracking satellites.
If you manage to survive deep space then you will find yourself in another Asteroid City... but this time defended by the Zaxxon robot who is armed with heat seeking missiles. Only 3 direct hits will destroy the robot... will you succeed to go onto another, even harder, mission?
The 3D graphics and smooth screen scrolling are stunning. An excellent rendering of the original arcade game.

Ratings: /10
Graphics: 8 Sound: 8 Colour: 8
Originality: 5 Interest: 7
Tape Order code: ZAXXO
Disk Order code: ZAXXO-D

ARCADE ADVENTURE

If you're quickly bored with arcade games, yet you find pure adventures a little heavy going, then how about a combination? We have a mega-selection this issue, including a brilliant new release from Software Projects in the form of JET SET WILLY, PSI WARRIOR from Beyond and MONTY MOLE from Gremlin Graphics.
Apart from Educational titles, where there is room for good quality products, the Arcade Aventure will, we feel, dominate the new releases in 1985. We're already reviewing some excellent new titles for our next issue.

Arabian Nights



Joystick: Essential
Category: Arcade/Adventure
Publisher: Interceptor Micros

Price: £6.95 **Club price: £5.95**

One of the newest and best games for the 64. Featuring speech, synthesized sound, and high quality, fast moving graphics. Your quest begins on Sinbad's ship, sailing the Red Sea. Your task is to collect the letters that make up the word ARABIAN. Once you have done this you journey the crocodile infested Annil, aboard a simple raft. The fierce currents sweep you into a great cavern, where the bewitched genies of Al-Kemzid are waiting to fight you. You manage to escape from the genies on a stolen flying carpet and fight your way through many perils until you reach Baghdad. At the Sultan's palace you try to dodge the guards and somehow find a way in to rescue

Anitra, the princess.
Great arcade/adventure, packed with action and highly recommended.

Ratings: /10
Graphics: 10 **Originality:** 10
Sound: 10 **Interest:** 9
Colour: 9 **Order code:** ARAKN

Aztec



Machine: Commodore 64
Joystick: No
Category: Arcade/Adventure
Publisher: Beyond

Price: £8.95 **Club price: £7.60**

Another Datamost game imported by Beyond, this time an animated adventure. You search for the legendary Golden Idol in a long lost South American temple. After a perilous journey you reach the temple. Now you stand at the stairway leading down into the darkness; do you want to go in? You type "yes" on the keyboard and you slowly walk down the stairs. What fiendish traps await you? What jealous guardians lurk within? Will you ever return with the idol? There is no joystick control as the explorer can do so many things that joystick options would be too limited. So, using the keyboard you can make the explorer turn left or right, walk, run, jump, climb, kneel, open boxes and examine and take their contents, place and light dynamite, spin around, draw a gun, shoot a gun, and lunge or slash with a machete!
An outstanding game with great animation, and unusual keyboard control. Recommended.

Ratings: /10
Graphics: 9 **Originality:** 9
Sound: 7 **Interest:** 8
Colour: 7 **Order code:** AZTEC

Caverns of Khafka



Machine: Commodore 64
Joystick: Essential
Category: Arcade/Adventure
Publisher: Cosmi/US Gold

Price: £8.95 **Disk:** £12.95
Club price: £7.60 **Disk: £11.00**

Deep in the caverns you are searching for the fabled treasure of the Pharoah Khafka. To reach the treasure you must find the five sacred seals of the door of the Pharoah's tomb.
Use your joystick to throw a rope, jump, shoot, walk, crawl or run left or right. You also can control the rickety old elevator that you use to lower yourself to the centre of the caverns. This is where most of the action takes place. Your quest for the seals is hindered by bats, scarabs, falling rocks, rolling boulders, fire fountains and volcanic lakes.
Even if you do manage to find all the seals and to enter the tomb, the game is by no means over. The immortal spirit guards of the tomb are intent on guarding their treasure!! Good luck . . . you will need it!
Great joystick control and impressive sound and graphics. Recommended.

Ratings: /10
Graphics: 8 **Originality:** 9
Sound: 7 **Interest:** 7
Colour: 7 **Tape Order code:** CAVKH
Disk Order code: CAVKH-D

Cavelon



Joystick: Essential
Category: Arcade/Adventure
Publisher: Ocean

Price: £6.90 **Club price: £5.85**

As you ride up to a large castle you see a maiden frantically waving for help. You decide to be gallant and rescue her—but you may yet change your mind! You encounter knights and archers on your mission . . . but you do have the mighty Excalibur.

Ratings: /10
Graphics: 7 **Originality:** 8
Sound: 8 **Interest:** 7
Colour: 7 **Order code:** CAVEL

BONUS PRICE

If you are applying to join our Club, you may take up to five titles at the 'Bonus Price', and as many as you wish at the 'Club Price'. This offer applies during your first 60 days membership. Thereafter you may take one item at the 'Bonus Price' provided you order three further products at the 'Club Price'.

China Miner



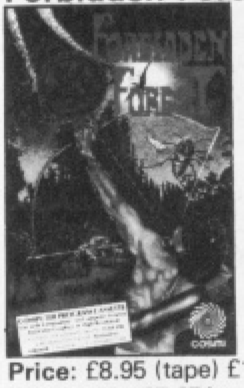
Joystick: Optional
Category: Arcade/Adventure
Publisher: Interceptor Micros

Price: £7.00 **Club price: £5.60**

Somewhere in China lie the Jade mines of the forgotten 'Pong'! dynasty. And somewhere in these mines lives the only person to know of these mines, Wally, a local miner. Wally must brave the perils of the mines, encountering/avoiding the few hundred resident nasties.
Chasms and collapsing floors, to conveyor belts and laser beams. This enormous games package has everything!

Ratings: /10
Graphics: 7 **Originality:** 6
Sound: 10 **Interest:** 7
Colour: 7 **Order code:** CHIMI

Forbidden Forest



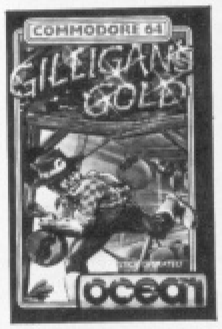
Joystick: Essential
Category: Arcade/Adventure
Publisher: Cosmi

Price: £8.95 (tape) £12.95 (disk)
Club price: £7.65 (tape) **£11.45** (disk)

Cosmi are rapidly establishing a reputation for the superb graphics of their games. Their Forbidden Forest is a work of computer art and the "mood" sound effects help to build up the menacing atmosphere. You wander in the forest, night is falling and you hear a rustling in the bushes . . . Your life depends on your skill as an archer. Perhaps the blood effects are a little overdone. An original game, not for the squeamish!

Ratings: /10
Graphics: 10 **Originality:** 10
Sound: 9 **Interest:** 10
Colour: 10 **Tapeorder code:** FORFO
Disk order code: FORFO-D

Gilligan's Gold



Joystick: Essential
Category: Arcade
Publisher: Ocean

Price: £6.90 **Club price: £5.45**

Gold fever is running high as you try to collect the gold bags and dodge the bandits hiding in the gold mine. Collect as many bags of gold as you can, and then load them onto your wheelbarrow. Escape from the bandits by jumping onto moving trucks or by using the ladders and lifts. Watch out for the mine shafts; deep and deadly!

Ratings: /10
Graphics: 9 **Originality:** 9
Sound: 10 **Interest:** 8
Colour: 8 **Order code:** GILGO

House of Usher



Loading: Turbo load
Joystick: Essential
Category: Arcade/Adventure
Publisher: Anirog

Price: £6.95 (tape) £9.95 (disk)
Club price: £5.55 (tape) **£8.45** (tape)

Arriving at the legendary House of Usher (home of generations of deranged madmen) you find yourself in a magnificent hall which gives you access to a further nine rooms. When you reach one of the nine doors you may go through it, entering into an action packed arcade game. If you wish to leave the house alive you must complete each of the nine challenges in each room.
Good use of sound and high quality graphics combine to make this game an excellent value arcade/adventure.

Ratings: /10
Graphics: 8 **Originality:** 9
Sound: 8 **Interest:** 9
Colour: 8 **Tapeorder code:** HOU
Disk order code: HOU-D

Jet Set Willy



Machine: Commodore 64
Joystick: Optional
Category: Arcade
Publisher: Software Projects



Price: £7.95 **Club price: £6.45**

The sequel to the saga of Manic Miner. Willy has gone from rags to riches and now lives in a huge mansion with so many rooms that Willy has never been in half of them before. He also has a yacht, a swimming pool and many, many friends. We meet Willy in the aftermath of an enormous party and all he wants to do is go to bed.Unfortunately his new housemaid will not let him rest before he has tidied up the mess. In the mansion there are many strange and dangerous things and Willy must avoid all the nasties so that he can collect all the bottles and glasses and get to bed.
Jet Set Willy has set new standards of gameplay on the Spectrum and now is doing the same on the Commodore. The graphics are very clear and smooth. Very addictive and highly recommended.

Ratings: /10
Graphics: 9 **Originality:** 8
Sound: 8 **Interest:** 9
Colour: 8 **Order code:** JSW64

Manic Miner



Joystick: Optional
Category: Arcade/Adventure
Publisher: Software Projects



Price: £7.95 **Club price: £5.95**

Willy the Miner has fallen down a disused mine shaft. He works his way through the various levels collecting keys and searching for secret treasure.
Manic Miner is a classic arcade adventure game—it has 20 caverns to penetrate, each requiring its own bit of ingenuity to ensure success. A great game!

Ratings: /10
Graphics: 8 **Originality:** 9
Sound: 7 **Interest:** 8
Colour: 7 **Order code:** MAN64

IMPORTANT
The prices in this catalogue take effect from 1st December 1984. All previous catalogues and price lists are now superceded. Logic 3 reserve the right to alter prices without notice.

Monty Mole



Machine: Commodore 64
Joystick: Optional
Category: Arcade/Adventure
Publisher: Gremlin Graphics

Price: £7.95 **Club price: £6.75**

Like all of Tony Crowther's games, this one is a visual delight with so much happening on the screen that you are tempted just to sit back and watch. This would of course be a mistake, since fast reactions are paramount if you are to avoid the NUMerous hazards from Coal Crushers and deadly Acid Baths to Flying Pickets and Homocidal Hairsprays!
A very enthralling game, but depending on your views the theme is either a well aimed DIG at the miners or else it reaches the PITS of bad taste.

Ratings: /10
Graphics: 8 **Originality:** 7
Sound: 8 **Interest:** 8
Colour: 8 **Order code:** MM64

PSI Warrior



Machine: Commodore 64
Joystick: Optional
Category: Arcade/Adventure
Publisher: Beyond

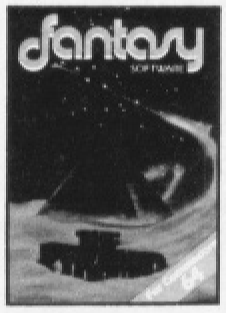


Price: £9.95 **Club price: £7.95**

After thousands of years of peaceful co-existence the Psi and Id creatures are now threatening mankind. Your task is to venture in to the core of their home Silo and defeat the Source. As you make your way deeper and deeper into the Silo, you are confronted by Psi and Id who try to drain away your energy. Can you reverse the process and gather enough energy to be able to use the Teleports, levitate and even become invisible? You'll need all the help you can muster for the final battle against the Source!
Psi Warrior is a complex game with a great deal of variety. The graphics are good and the animated Psi Warrior very impressive indeed. It might take some time to master the wide range of controls, but it is well worth it to play this unusual and interesting game.

Ratings: /10
Graphics: 8 **Originality:** 8
Sound: 7 **Interest:** 9
Colour: 7 **Order code:** PSIWA

Pyramid 64



Joystick: Optional
Category: Arcade/Adventure
Publisher: Fantasy

Price: £6.50 **Club price: £5.45**

Guide Ziggy, equipped with defence shield and phased plasmic laser, through the Pyramid, which consists of 120 chambers on 15 levels. Each chamber is inhabited by one of *60* varieties of weird creatures and aliens, ranging from galactic strawberries to demons, and cosmic claws to mutant eyes. This game will continue to amaze you for a long time to come.

Ratings: /10
Graphics: 7 **Originality:** 8
Sound: 6 **Interest:** 8
Colour: 7 **Order code:** PYR64

Son of Blagger



Joystick: Optional
Category: Arcade/Adventure
Publisher: Alligata

Price: £7.95 **Club price: £6.75**

Treading in his father's footsteps, Son of Blagger's mission is not an easy one. The journey through the National Security HQ is treacherous. you will encounter ladders, slides, conveyors, killing bushes and dissolving floors and many more.
Your mission is to find the golden keys—your only reliable means of escape.
A high quality game, in the Manic Miner tradition, excellent graphics and true lasting interest.

Ratings: /10
Graphics: 8 **Originality:** 7
Sound: 8 **Interest:** 8
Colour: 8 **Order code:** SOB

ADVENTURE

Once upon a time in the days long gone when maidens had to be rescued, dragons slayed, and the only computers were mainframes there was only one computer game worth playing called ADVENTURE. Written by two IBM programmers, ADVENTURE was a fairy tale where *you* were the hero. Your skill and daring (not to mention lateral thinking!) determined the course of the story and whether you emerged victorious or vanquished.
Playing ADVENTURE became a cult and soon there was no self-respecting computer installation without ADVENTURE hidden deep within the system files—to be played long after midnight or when the Data Processing Manager was not looking! IBM even tried banning the game at one installation—it had to be hastily reinstated when the productivity of the programming team slumped dangerously low! Today with many hundreds of computer games to choose from the adventure playing cult continues. The original ADVENTURE is now available on micros. You will find it in this catalogue under the name COLOSSAL ADVENTURE.
As well as the game that started it all there are many more treats in store for adventure addicts in this issue with a number of excellent new titles. There's Dallas Quest, recently released from U.S. Gold, Sherlock from Melbourne House, the much publicised Eureka and others. Just a couple of these will keep you fully involved until our next catalogue arrives!

Adventure Quest



Category: Adventure
Publisher: Level 9

Price: £9.95 (tape) £11.50 (disk)
Club price: £8.45 (tape) **£9.75** (disk)

Starting at the Well-House from Colossal Adventure, you venture through a desert of shifting sands and up a mountain guarded by Orcs seeking the Dark Tower of the Demon Lord. Each of the very many locations in ADVENTURE QUEST has an elaborate description giving the game a richness of atmosphere which has become the hallmark of Level 9's adventures. The puzzles are perplexing but always manageable, and the vastness of the fantasy world to be explored ensures weeks and weeks of absorbing play.

Ratings: /10
Graphics: N/A
Originality: 7 **Tape order code:** ADVQU
Interest: 9 **Disk order code:** ADVQU-D

Arrow of Death 1



Category: Adventure
Publisher: Channel 8

Price: £9.95 **Club price: £8.45**

Five years of peace followed the successful return of the Golden Baton. But all is not well in the Kingdom. The Baton, once of brilliant gold, has tarnished and gloom and despair pervades the kingdom. Your quest is to seek out and destroy the source of evil. As in other Channel 8 adventures, the puzzles you have to solve are baffling but infuriatingly logical.

Ratings: /10
Graphics: 7
Originality: 6 **Order code:** AOD1

Arrow of Death 2



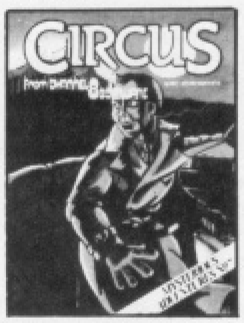
Category: Adventure
Publisher: Channel 8

Price: £9.95 **Club price: £8.45**

Having successfully completed the first part of the ARROW OF DEATH, you should now have all of the parts to assemble a magical arrow. To save the kingdom you must destroy Xerdon the evil accomplice of Arkyz, the wizard. Every location in these adventures is fully illustrated in the inimitible Channel 8 style.

Ratings: /10
Graphics: 7
Originality: 6 **Order code:** AOD2

Circus



Category: Adventure
Publisher: Channel 8

Price: £9.95 **Club price: £8.45**

Miles from nowhere, you run out of petrol. Spotting a circus in a field you set out towards it looking for help. As you approach the Big-Top you discover that all is not what it seems. Seventh of the Channel 8 Mysterious Adventures, this one is the most eerie and spine-tingling. Not an adventure for the faint-hearted! Highly recommended.

Ratings: /10
Graphics: 7
Originality: 10
Interest: 8 **Order code:** CIRCU

Colossal Adventure



Category: Adventure
Publisher: Level 9

Price: £9.95 (tape) £11.50 (disk)
Club price: £8.45 (tape) **£9.75** (disk)

Level 9's full-scale version of the original Crowther and Woods ADVENTURE but with a new end-game involving over 70 new locations. This Classic is the one that started it all and a version of this quality belongs in every adventure players collection.
A very good introduction to adventuring.

Ratings: /10
Graphics: N/A
Originality: 10
Interest: 10
Tape order code: COLAD
Disk order code: COLAD-D

CREDIT CARD SALES

You may telephone your order to us at 0494-41533. Have your card handy and quote the order codes, titles and prices.

The Dallas Quest



Machine: Commodore 64
Joystick: No
Category: Adventure
Publisher: US Gold/Datasoft



Price: £14.95 (Disk)
Club price: £11.95 (Disk)

You are a detective summoned to Southfork Ranch for a meeting with Sue Ellen. She has a letter from the late Jock Ewing to Miss Ellie, telling of an extremely rich oilfield in South America.
In this letter was a ring and a photo of "Chugalug" Jones who runs a trading post somewhere in the depths of South America. The letter explains that if anything happens to Jock, Chugalug is to only give the map of the oilfield to the person who is in possession of the ring.
Sue Ellen explains that she wants to be financially independent of JR. She wants you to find the map and gives you the ring, photo and $500,000 expenses. What's more she will pay you a bonus of two million dollars if you get the map safely to her. Unknown to you or Sue Ellen, JR has been listening outside the door, and is out to stop you. Avoid him at all costs.
Featuring all the members of the Ewing family, outstanding graphics and sound. Recommended to all addicts of the TV series.

Ratings: /10
Graphics: 8
Sound: 9
Colour: 8
Originality: 8
Interest: 8
Order code: DALLA-D

Dungeon Adventure



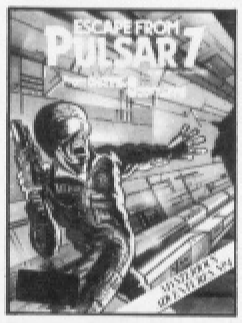
Category: Adventure
Publisher: Level 9

Price: £9.95 (tape) £11.50 (disk)
Club price: £8.45 (tape) **£9.75** (disk)

The sequel to COLOSSAL ADVENTURE and ADVENTURE QUEST, this is the more difficult of the three and is every bit as dripping with atmosphere. Washed up on the bank of a wide river, you see a gigantic Goblin's head carved into the cliff, it's insolent tongue thrust out as a bridge over the river into the entrance to the Dungeons formed by its mouth. If you have played the other two you will not need convincing. The Demon Lord is dead, but will you live to plunder his Dungeons and return to Minas Tirith?

Ratings: /10
Graphics: N/A
Originality: 6
Interest: 9
Tape order code: DUNAD
Disk order code: DUNAD-D

Escape From Pulsar 7



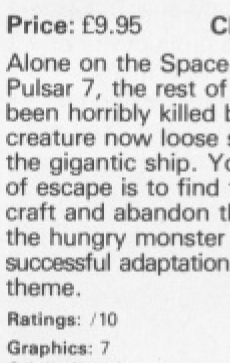
Category: Adventure
Publisher: Channel 8

Price: £9.95 **Club price: £8.45**

Alone on the Space-freighter Pulsar 7, the rest of the crew has been horribly killed by an alien creature now loose somewhere in the gigantic ship. Your only hope of escape is to find the shuttle-craft and abandon the ship before the hungry monster finds you! A successful adaptation of a much-used theme.

Ratings: /10
Graphics: 7
Originality: 6
Interest: 7
Order code: EFP7

Eureka!



Machine: Commodore 64
Category: Adventure
Publisher: Domark

Price: £14.95 **Club price: £12.70**

The undoubted attraction of this game is the £25,000 prize for the first person to solve a puzzle and ring the telephone number so revealed. The product arrived just as we were going to press, so only a limited review was possible. The game consists of five adventures, each containing clues to the code. To get into the adventure you first have to play an arcade game—number one consists of a variety of paths down which you must travel collecting what look like barbequed chickens(!) which you drop at base. By scoring highly in the arcade game you can increase your 'vigour' before tackling the adventure. True adventure fans will find the commands limited—the publishers excuse this by saying it saves time! The adventures are accompanied by header pictures which are a nice touch.
Is this a good game in its own right, or would it lose all interest if you took away the prize? No, we think it stands up on its own. By the way, if you do buy it, and you expect to be working late into the night to solve the puzzle, you don't have to panic that someone else might have got there first. There's a 24-hour hot-line for you to ring and check. Don't worry we checked—it's still up for grabs.

Ratings: /10
Graphics: 8
Sound: n/a
Colour: 5
Originality: 8
Interest: 10
Order code: EUR64

The Hobbit



Joystick: No
Category: Adventure
Publisher: Melbourne House



Price: £14.95 **Club price: £11.25**

Take on the role of Bilbo and explore Middle Earth, where you will face danger and expect new challenges. Seek out the evil dragon and return the treasure he hoards. Excellent 3D graphics and amusing text. A 'must' for every self respecting adventurer. Lock the door of your computer room, 'THE HOBBIT' will keep you busy unravelling clues, for several weeks to come!

Ratings: /10
Graphics: 8
Sound: n/a
Colour: 8
Originality: 9
Interest: 10
Order code: HOB64

Lords of Time



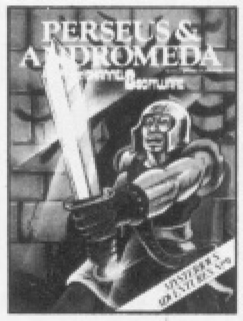
Category: Adventure
Publisher: Level 9

Price: £9.95 (tape) £11.50 (disk)
Club price: £8.45 (tape) **£9.75** (disk)

Evil Time Lords are interfering with Earth's history and it is up to you to travel through many time-zones, collecting various items you will need to defeat them. This is a wonderful new adventure from Level 9 and the elaborate descriptions of the many locations are excellent once again. From prehistoric encounters with cavemen, through the bustle of a Roman Market town to the Middle Ages and beyond to the future, this game is a must for history buffs and frustrated time-travellers alike.

Ratings: /10
Graphics: N/A
Originality: 8
Interest: 9
Tape order code: LOT
Disk order code: LOT-D

Perseus and Andromeda



Category: Adventure
Publisher: Channel 8

Price: £9.95 **Club price: £8.45**

This adventure is based on Greek mythology. You are Perseus, son of Zeus and your task is to defeat and behead Medusa, the Gorgon. PERSEUS AND ANDROMEDA is yet another original concept for Channel 8. Like all of their adventures a great deal of attention is paid to the graphics, each location being fully illustrated.

Ratings: /10
Graphics: 7
Originality: 8
Interest: 7
Order code: PAA

Sherlock



Machine: Commodore 64
Joystick: n/a
Category: Adventure
Publisher: Melbourne House



Price: £14.95 **Club price: £12.95**

Not at all elementary, my Dear Watson!
You play the character of Holmes, while other characters behave according to their own personality. The game uses a technique called 'Inglish' which allows you, Holmes, to talk to the other characters to obtain information and crack the case! Throughout the game, time is displayed by a clock on the screen and the detail is unbelievable; for instance you can travel from Baker Street in a taxi to your destination but you must call the taxi, tell him your direction of travel and then pay him! The large vocabulary allows many different commands to be given, but you must remember to leave time for Holmes to sleep! The game shows both text and graphical representation on the screen and can last for several months by saving it after each session. Superb entertainment, brilliantly absorbing!

Ratings: /10
Graphics: 7
Sound: n/a
Colour: 8
Originality: 10
Interest: 10
Order code: SHE64

Snowball



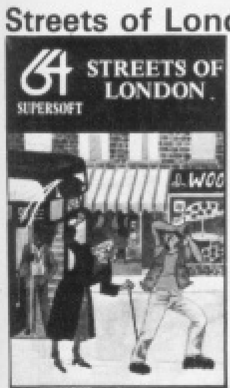
Category: Adventure
Publisher: Level 9

Price: £9.95 (tape) £11.50 (disk)
Club price: £8.45 (tape) **£9.75** (disk)

On board a 7000(!) location interstellar colony transport hurtling into the sun, you awake from hibernation and try to save the colony from destruction. You must explore the massive ship, learn how to interrogate the ship's computer, negotiate the robot stores, construct a spacesuit out of spare parts and much more.

Ratings: /10
Graphics: N/A
Originality: 10
Interest: 9
Tape order code: SNOWB
Disk order code: SNOWB-D

Streets of London



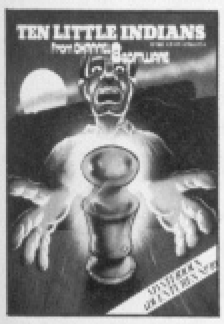
Category: Adventure
Publisher: Supersoft

Price: £9.95 (tape) £11.95 (disk)
Club price: £8.45 (tape) **£9.95** (disk)

This adventure is in considerably bad taste and extremely funny. Mug your way around London until you can afford a rail ticket out and then... watch out world! This may be the first time you ever drink a flask of meths, get abused by a troup of boy scouts or get hospitalized by a granny!

Ratings: /10
Graphics: N/A
Originality: 7
Interest: 6
Tape order code: SOL
Disk order code: SOL-D

Ten Little Indians



Category: Adventure
Publisher: Channel 8

Price: £9.95 **Club price: £8.45**

As the train bears you closer to your destination, you ponder the strange circumstances of the case. The Major reputedly left a fortune in gold which has never been found. Will you succeed where so many others have failed, or will you too never be heard of again? Set in a creepy country manor house TEN LITTLE INDIANS is another eerie and atmospheric adventure from Channel 8, and is as original as it is absorbing.

Ratings: /10
Graphics: 7
Originality: 8
Interest: 8
Order code: TLI

The Time Machine



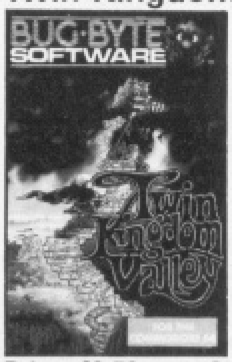
Category: Adventure
Publisher: Channel 8

Price: £9.95 **Club price: £8.45**

As an intrepid reporter, you are on your way to investigate mysterious 'Goings on' in an isolated house on the moor. As the strange tale unfolds you wonder if you will ever return to report what you have found! Another chilling adventure from Channel 8.

Ratings: /10
Graphics: N/A
Originality: 9
Interest: 8
Order code: TTM

Twin Kingdom Valley



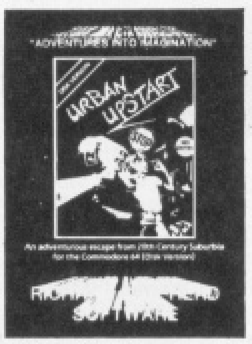
Joystick: No
Category: Adventure
Publisher: Bug Byte

Price: £9.50 **Club price: £7.60**

A high class adventure. The object of the game is to collect as much treasure as possible. Sounds simple? Well it's not; as you play your path will be beset with traps and puzzles, so mind where you go!
This adventure is illustrated with excellent graphics (over 173 different screens), many with animation. The game has a very extensive vocabulary.

Ratings: /10
Graphics: 9
Sound: No
Colour: 8
Originality: 9
Interest: 9
Order code: TKV

Urban Upstart



Category: Adventure
Publisher: Richard Shepherd

Price: £6.50 **Club price: £5.55**

Scarthorpe: twentieth century suburb where 'even the dogs carry flick-knives'! You must escape from this urban wasteland, which is easier said than done! There are many puzzles for you to solve whilst avoiding hazards such as football hooligans and an over zealous police-force. If you can actually stay out of jail or hospital you will discover just how hard it is to get out of this dead-end town.

Ratings: /10
Graphics: 7
Originality: 10
Interest: 8
Order code: URBUP

Valhalla



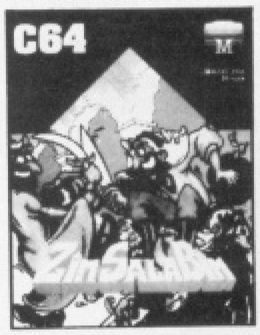
Joystick: No
Category: Adventure
Publisher: Legend

Price: £14.95 **Club price: £12.95**

A really top rate adventure with superb graphics. The background scenery is highly detailed, and the animation of the characters is very good. You see the characters execute your commands.
There are six quests in this adventure—enough to keep any adventurer occupied for several months. A Spectrum 'classic' now available on the Commodore 64.

Ratings: /10
Graphics: 9
Sound: 6
Colour: 7
Originality: 10
Interest: 10
Order code: VAL64

Zim Sala Bim



Machine: Commodore 64
Joystick: Optional
Category: Adventure
Publisher: Melbourne House



Price: £14.95 **Club price: £12.95**

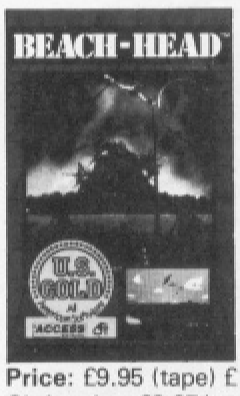
A new idea in adventure games... as well as entering text you can control a figure on screen with either joystick or keyboard. You can examine your surroundings in great detail, without the usual time consuming text entering. Every location is shown in detail and you watch your character carry out any commands.
You are the only surviving man from your village of Zim Sala Bim. There is no money or food left as the Sultan has plundered the village. It is your job to break into the palace, find the Sultan's bedroom, and recover your gold from it.
An enjoyable new adventure experience with clear graphics and good background sound.

Ratings: /10
Graphics: 8
Sound: 8
Colour: 6
Originality: 8
Interest: 7
Order code: ZIM64

ARCADE SIMULATION

Do you yearn to drive a racing car, compete in the Olympics, or perhaps play for England in a major international soccer match? If so, then you should find an Arcade/simulation that'll fulfil your ambition—if not in reality, then in excitement and fun. Her we give a selection of the best—chosen not only for their realism but also for added touches like the way the athlete reacts to success or failure in Daley Thompson's DECATHLON. Two titles deserve special mention—SUMMER GAMES and INTERNATIONAL SOCCER. The latter was first released this time last year, but Commodore quickly ran out of stock and couldn't meet the demand until recently—perhaps that's why they've just hoisted the price up to £14.95! (we'll help a little by offering it to you at the 'Bonus Price' of £10.95—only £1 more than it used to cost). The game itself is an excellent simulation of a football match, with superb 3D graphics—highly recommended. Moving to SUMMER GAMES, we can't understand why this game hasn't featured more highly in the many charts—we think it's one of the most brilliant programs currently available for the 64, albeit at a price.

Beach Head



Joystick: Essential
Category: Arcade/Simulation
Publisher: Access



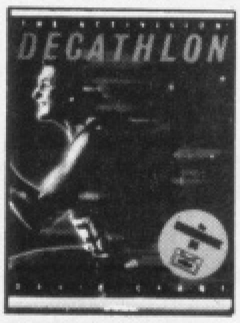
Tape Only

Price: £9.95 (tape) £12.95 (disk)
Club price: £8.95 (tape) **£11.45** (disk)

Beach Head is a potent combination of arcade action, and simulation, resulting in one of the most exciting *and* most realistic games currently available for the Spectrum. As Admiral of the Fleet, you have to decide between a full frontal assault or whether to try a surprise attack, sending your fleet down a side channel which may be mined. As naval gunman, you face constant harassment from enemy fighters as you try to establish the range of the enemy's ships. Finally, as tank commander, you have to fight your way through the enemy held beach. If you like action you *must* get this game.

Ratings: /10
Graphics: 10
Sound: 10
Colour: 10
Originality: 10
Interest: 10
Order code: BEACH

The Activision Decathlon



Machine: Commodore 64
Joystick: Essential
Category: Arcade/Simulation
Publisher: PSS

Price: £9.95 **Club price: £8.49**

If the excellent SUMMER GAMES is a little too expensive, then DECATHLON is definitely an alternative worth considering. The figures in the game are beatifully animated. You compete against the computer in the ten events of the decathlon: the 100 metres, 400 metres, 1500 metres, high jump, long jump, pole vault, shot putt, 100 metre hurdles, javelin and the discus. The 100 metres demands furious waggling of the joystick from side to side. In the high jump, long jump and pole vault, the best strategy is to get as fast a run-up as possible. In the discus, javelin and shot putt you must aim for a good take off angle and a powerful throw.
The throwing and jumping events all require a fair amount of timing, skill and judgement. The 100 metres and 110 metre hurdles are both excellent with fast responses and smooth animation and scrolling. However, the 400 metres and 1500 metres are punishing as once started you cannot drop out of the event, the longest of which can last for ages. It is tedious and tiring to have to waggle a joystick furiously for anything up to 5 minutes. Nevertheless, the excellent graphics and sound make up for this and the option to choose which of the 10 events you enter allows you to miss them out. An excellent game, outstanding graphics, sound and colour. Great fun and good value for money.

Ratings: /10
Graphics: 8 **Originality:** 9
Sound: 7 **Interest:** 8
Colour: 9 **Order code:** DECAT

International Soccer



Machine: Commodore 64
Joystick: Essential
Category: Arcade/Simulation
Publisher: Commodore



Price: £14.95 (Cartridge) **Club price: £12.95**

International Soccer is a great sports arcade game. Whether you pit your skill against the computer or another player you are going to have an exciting match. There are nine different levels to choose from, so whether you are a 4th division novice or a European Cup finalist you'll always find this game challenging. The brilliant animation guarantees lots of quick action, almost like the real thing minus the hooligans! So realistic that Commodore even considered selling the advertising space on the billboards. A Commodore classic, excellent family entertainment.

Ratings: /10
Graphics: 10 **Originality:** 7
Sound: 6 **Interest:** 10
Colour: 9 **Order code:** INTSO

Spitfire Ace



Machine: Commodore 64
Joystick: Essential
Category: Arcade/Simulation
Publisher: US Gold/Microprose

Price: £9.95 (tape) 12.95 (disk)
Club price: £7.95 (tape) **£10.95** (disk)

An exciting 3D arcade/simulation. As the pilot of a Spitfire you are battling to save London during the Blitz. The screen shows the view out of your cockpit, including the horizon and any enemy fighters. At the bottom of the screen your instrument panel shows you your speed, altitude, power, and ammo remaining. In the centre of your screen is the gunsight. You can use either two joysticks, or one joystick and the keyboard to fly the plane. The main stick controls your throttle, and also allows you to bail out. The object of the game is to notch up as many enemy kills as possible, and work your way to becoming a Spitfire Ace.
Although the graphics are chunky, this simulation is good fun to play and up to four players can join in.

Ratings: /10
Graphics: 6 **Originality:** 8
Sound: 7 **Interest:** 8
Colour: 7 **Tape order code:** SPIAC
Disc order code: SPIAC-D

Summer Games



Machine: C64
Joystick: Essential
Category: Arcade/Simulation
Publisher: Epyx/Quicksilva

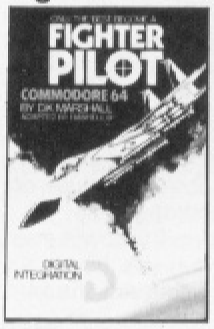
Price: £14.95 **Disk:** 19.95
Club price: £12.75 **Disk: £16.95**

Summer Games is one of the most exciting and realistic games currently available for the 64. Its state-of-the-art graphics have to be seen to be believed!!
You and up to 7 other competitors have the honour of competing in the Summer Games. The games start with the opening ceremony and then you are asked to enter your name and the country you wish to represent. The appropriate anthem is played. Next you can choose whether to compete in all or just a few of the events.
The first event is the Pole Vault. You choose the starting height for jumping and the hand grip you wish to use. Where and when do you want to plant or release the pole?
The second event is Platform Diving. The platform is 30 feet high, the tension is rising, the crowd and judges are waiting... as you dive you rotate slowly and enter nearly vertical... the judges award you three 8's and four 7's!
The 4x400m relay and 100m dash require speed, pacing and perfect timing.
The gymnastics are a test of grace and precision where you aim to get a good take off and clean body movement.
The Freestyle Relay & 800m Freestyle swimming test your strength and stamina.
Finally Skeet Shooting demands precision timing & coordination, if you are to win this test of markmanship.
Words cannot begin to do justice to this game—get it and see for yourself. Highly recommended.

Ratings: /10
Graphics: 10 **Originality:** 10
Sound: 10 **Interest:** 10
Colour: 10 **Tape order code:** SUMGA
Disk order code: SUMGA-D

SIMULATION

Fighter Pilot



Machine: Commodore 64
Joystick: Optional
Category: Simulation
Publisher: Digital Integration

Price: £9.95 (tape) £12.95 (disk)
Club price: £8.45 (tape) **£11.45** (disk)

The best flight simulation for the ZX Spectrum, Fighter Pilot, is now available with improved graphics and sound for the Commodore 64. This is a real-time simulation based on a USAF jet fighter. It is excellent value for money, as most flight simulations usually cost well over £15, and often leave you flying around with no real purpose. In Fighter Pilot there is no chance of this: with flying practice, flying training and air to air combat to choose from. The air-to-air combat feature is really superb. You must use your skill and limited ammunition to overcome the enemy planes if you are to return back to base.
There are training modes and your pilot skill rating can be adjusted for varying difficulty. When you become more experienced you can even add cross-winds and turbulence, and attempt a blind landing!
Breathtaking 3D cockpit views—recommended.

Ratings: /10
Graphics: 8 **Originality:** 9
Sound: 6 **Interest:** 10
Colour: 8 **Tape order code:** FP64
Disk order code: FP64-D

Hustler



Joystick:
Category: Simulation
Publisher: Bubblebus

Price: £6.99 **Club price: £5.95**

This is video pool at its best. Hustler offers full control over 6 different video pool games, with smooth, accurate and exciting gameplay. There is even a rendition of the theme tune from 'Pot Black'!

Ratings: /10
Graphics: 8 **Originality:** 9
Sound: 8 **Interest:** 9
Colour: 7 **Order code:** HUSTL

Pinball Wizard



Joystick: No
Category: Simulation
Publisher: C.P. Software

Price: £6.95 **Club price: £5.90**

Play this old favourite in the comfort of your own home. Aim for the 'hi' bumpers for maximum points and see the realistic animation as you fire the first ball. Careful use of the flippers enables scores in excess of 20,000 to be reached.
Featuring superb, colourful, fast action graphics and synthesized sound this game has the feel of a real pinball machine. Five skill levels, launch, flippers, high score, bonus and freeballs... every bit as good, if not better than, the real thing.

Ratings: /10
Graphics: 9 **Originality:** 10
Sound: 7 **Interest:** 9
Colour: 9 **Order code:** PINWI

IMPORTANT

The prices in this catalogue take effect from 1st December 1984. All previous catalogues and price lists are now superceded. Logic 3 reserve the right to alter prices without notice.

Soloflight



Joystick: Optional
Category: Simulation
Publisher: Microprose



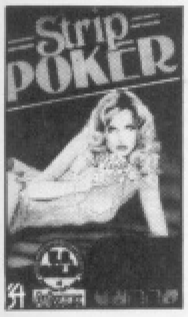
Price: £14.95 **Club price: £12.95**

Soloflight is an excellent real-time flight simulator which allows you to experience the challenge of piloting your own light plane. You master take offs, landings, navigation, emergency procedures and how to cope with turbulence and other bad weather conditions.

Ratings: /10
Graphics: 9 **Originality:** 9
Sound: 9 **Interest:** 10
Colour: 9 **Order code:** SOLFL

 ★ New Members—you can take up to five titles at the 'Bonus Price'

Strip Poker



Machine: Commodore 64
Joystick: Essential
Category: Simulation
Publisher: US Gold/Artwork

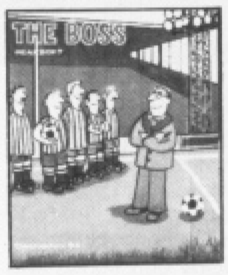
Price: £9.95 **Club price: £8.45**

This program plays a very good game of poker, every bit as addictive as the real thing. But come off it, US Gold, women play poker and computer games too and Suzi and Melissa have nothing under their clothes to interest us!!! Why not have an optional Butch and Dick so that the rest of us can enjoy what is otherwise a well produced game?

Ratings: /10

Graphics: 9	Originality: 8
Sound: 6	Interest: 8
Colour: 7	Order code: STRIP

The Boss



Machine: Commodore 64
Joystick: No
Category: Strategy
Publisher: Peaksoft

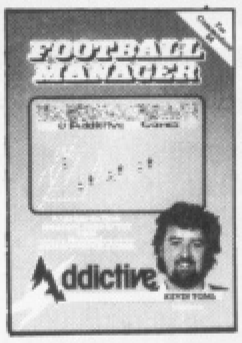
Price: £8.95 **Club price: £7.60**

If you've ever wanted to manage a football team and experience the thrills and spills of team management at first hand—this is the game for you! Select, position, buy and sell players, spy on the opposition and plead with the bank manager when gate returns are down. In short, everything a football league manager has to do. Each week you are given a goal-by-goal report of the match, news of injuries, suspensions and general ups and downs of the club which are guaranteed to give you ulcers! Can you take your team to promotion to the next division, maybe even to the top of the league, or will you be relegated this season?
In short, 'The Boss' has got just about everything, making it one of the most complete simulations of any kind for a home micro. It's so engrossing it might just keep you out of the football ground on Saturday!

Ratings: /10

Graphics: n/a	Originality: 9
Sound: n/a	Interest: 9
Colour: n/a	Order code: BOS64

Football Manager



Joystick: N/A
Category: Strategy
Publisher: Addictive Software

Price: £7.95 **Club price: £6.75**

A 'must' for football enthusiasts! Learn to select your team and cope with injured players, then watch in nail-biting anticipation as a match is played without your intervention! If you've chosen your team skilfully you could win the match and move up the league, or progress a stage towards winning the F.A Cup. As in real-life, success breeds success. Your gate receipts climb and you have more money to spend on new and better players. You start at the bottom of the fourth division and once you reach the top of the first you've proved your skill as a football manager. Then you go on to the next level...

Ratings: /10

Graphics: 8	Originality: 10
Sound: n/a	Interest: 10
Colour: 5	Order code: FO064

ARCADE STRATEGY

Raid Over Moscow



Machine: Commodore 64
Joystick: Essential
Category: Arcade/Strategy
Publisher: US Gold/Access

Price: £9.95 **Club price: £8.45**

Raid Over Moscow is a vast game with 8 different sequences. S.A.C. (Strategic Air Command) headquarters alerts you of a nuclear attack. As squadron commander of a U.S. Defence Space Station, you must lead your commandos through a great number of very dangerous missions (getting out of the space station is hard enough!). If you succeed in locating and destroying the launch sites, you can carry on to Moscow and try to knock out the very heart of the Soviet defences. Raid Over Moscow is a game that requires a great variety of skills. There is a practice option so you can brush up on your weaker points. It is a difficult but engrossing game with impressive graphics and lots of action.

Ratings: /10

Graphics: 8	Originality: 8
Sound: 8	Interest: 9
Colour: 8	Order code: ROM

3D Time Trek



Joystick: Essential
Category: Arcade/Strategy
Publisher: Anirog

BONUS £3.45 PRICE

Price: £5.95 **Club price: £4.45**

One of the few survivors of the planet 'Corillian', following a raid by space pilots, you have vowed to avenge their murderous attack, and end their galactic tyranny. Your ship is armed with computers and sensors to help you—but your mission is not easy.
A good Startrek game, making full use of both keyboard and joystick.

Ratings: /10

Graphics: 7	Originality: 8
Sound: 7	Interest: 7
Colour: 7	Order code: 3DTIM

Drelbs



Machine: Commodore 64
Joystick: Essential
Category: Strategy
Publisher: US Gold/Synsoft

Price: £9.95 **Club price: £7.95**

On the screen you are presented with an "atomic flip grid"! This is a grid in which you have to complete the component squares, by flipping the sides into place. When you have done this the square will start pulsing. You must complete all the squares possible in that particular grid. You play the part of "Drelb". There are also a few "trollabars" in the grid and these try to undo your work. There are eight rounds, after which you may enter the Drelbish Corridor. Here you must free every Drelb you can touch, avoiding the gargoyles that lurk in the dark.
An unusual game, requiring fast reflexes and logic.

Ratings: /10

Graphics: 6	Originality: 7
Sound: 6	Interest: 7
Colour: 7	Order code: DRELB

BONUS PRICE

If you are applying to join our Club, you may take up to five titles at the 'Bonus Price', and as many as you wish at the 'Club Price'. This offer applies during your first 60 days membership. Thereafter you may take one item at the 'Bonus Price' provided you order three further products at the 'Club Price'.

Psytron



Machine: Commodore 64
Joystick: Optional
Category: Strategy
Publisher: Beyond

Price: £9.95 **Club price: £8.45**

Less than human, far more than mere computer, the PSYTRON controls the massive Betula 5 complex. The Psytron has to be prepared to defend the planet against sudden attack.
Your mission is to survive the attackers until the final conflict. Smoothly scrolling amazing animation, six levels of play and a comprehensive manual makes this an enormous games package.
A demanding game you will want to play again and again.

Ratings: /10

Graphics: 9	Originality: 9
Sound: 7	Interest: 9
Colour: 9	Order code: PSY64

STRATEGY

With these 'strategy' games you can practice your powers of judgement, shrewdness and planning. The five selections shown here offer a variety of challenges.

Battle for Midway



Machine: Commodore 64
Joystick: Essential
Category: Strategy
Publisher: PSS

Price: £9.95 **Club price: £8.45**

Battle for Midway puts you in command of the US Pacific fleet six months after the Japanese attack on Pearl Harbour.
It is your task to stop the Japanese invading Midway Island, and to sink as many of their aircraft carriers as possible
First you are given a large scale map showing an overview of your own forces, from which forces can be manouevred, aircraft launched, landed and sent on attack missions. Secondly, you have constantly updated details of those forces, down to the last fighter. Thirdly, you are given a visual representation of the battle and your forces at every stage.
Definitely not a simple game, but designed for the person who enjoys a stimulating intellectual challenge. Beginners will be glad to learn that there are 3 different skill options! Recommended.

Ratings: /10

Graphics: 8	Originality: 9
Sound: 7	Interest: 8
Colour: 7	Order code: BATMI

UTILITY

Ultisynth 64



Joystick: No
Category: Utility
Publisher: Quicksilva

Price: £14.95 **Club price: £12.95**

The Commodore 64 has the most advanced sound capability of any current home microcomputer.
Its SID (Sound Interface Device) chip gives the 64, in theroy at least, many of the features of commercially available synthesisers. But the programmer working in BASIC can only scratch the surface of the SID chip's enormous versatility, and—until the availability of 'Ultisynth'—you needed to be a combination of: hardware expert, machine code genius, sound engineer and musician—to persuade the Commodore 64 to 'perform'.
Ultisynth is a user-friendly toolkit which will allow you to control: sound envelope, waveform, pulsewidth, filter, synchronization, ring modulation, pitchbend, layering, glide and many other capabilities of the SID.
If you want to compose music, produce realistic explosions, make birdsong, imitate rain, thunder, flying saucers or simply produce the voice of a piano, violin, organ, guitar, harpsichord, woodwind or percussion instrument—then this is the product for you. With Ultisynth you will never again think of your 64 as 'just another home computer'!

Ratings: /10

Graphics: N/A	**Originality:** 10
Sound: 10	**Interest:** 10
Colour: N/A	**Order code:** ULT64

MusiCalc 1

Machine: Commodore 64
Manufacturer: Waveform Corporation



Price: £45.00 **Club price: £40.00**
(disk only)

The state-of-the-art Sound Synthesizer and Sequencer for the 64. The synthesizer allows you to change and control the sound of the music while it is playing, providing independent control over all three voices of the SID. Starting with 32 preset sounds you can experiment endlessly. The control panel uses graphics intelligently to enable you to see at a glance the current settings of all the 70 slider and switch controls.
The score grid of the sequencer shows you what notes MusiCalc is playing. At any time you can access 32 preprogrammed scores or melodies. Simple commands allow you to quickly edit songs and rhythms. You use the sequencer to tell the synthesizer what to play. A special keyboard mode allows you to play and record music from the 64's keyboard and edit while you listen.
If you want to untap your own musical creativity and that of your 64 then this is the package for you.

Ratings: /10

Graphics: 9	**Originality:** 10
Sound: 10	**Interest:** 10
Colour: 9	**Order code:** MUSC1

MusiCalc 2

Machine: Commodore 64
Manufacturer: Waveform Corporation



Price: £31.00 **Club price: £27.00**
(disk only)

MusiCalc 2 reads the music you make on your MusiCalc 1, Sythesizer and Sequencer, and allows you to see it in standard musical notation complete with bars, staffs, cleffs, and notes. A hardcopy function allows you to print out your score. If you have MusiCalc 1 and a Commodore graphics printer then MusiCalc 2 is a must.

Ratings: /10

Graphics: 9	**Originality:** 10
Sound: n/a	**Interest:** 10
Colour: n/a	**Order code:** MUSC2

MusiCalc African/ Latin template

Machine: Commodore 64
Manufacturer: Waveform Corporation



Price: £15.00 **Club price: £13.50**
(disk only)

Give your music the African beat or go Latin with this disk of pre-programmed rhythms. Needs MusiCalc 1.

Ratings: /10

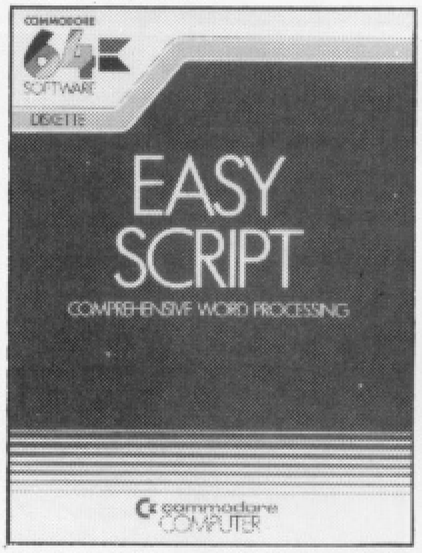
Graphics: n/a	**Originality:** 8
Sound: 10	**Interest:** 9
Colour: n/a	**Order code:** MUSC3

APPLICATIONS

The Commodore 64, with a Disk Drive and a compatible printer makes up a very useful system for the 64 owner who wants to get some serious work out of his system, or who wishes to explore the possibilities of using a personal computer in his/her business.
Here we review the 4 programs which have established themselves as the undoubted leaders for business applications on the Commodore 64.

Easyscript

System Required: Commodore 64 Disk drive Printer
Publisher: Commodore



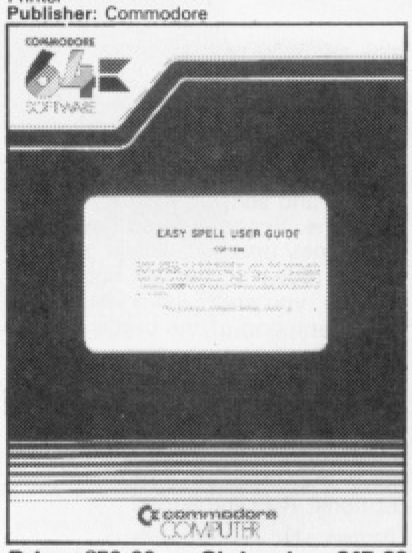
Price: £75.00 **Club price: £67.50**
(Disk)

Developed by Precision Software from their 'Superscript' program—for the Commodore PET—Easyscript is the best wordprocessor for the 64, combining the best facilities available on other popular wordprocessors and then adding some more!
Of course all the usual facilites for editing, modifying, deleting and inserting words, lines and paragraphs are supported as is the facility for sending out 'individualised' standard letters to a number of recipients. Extra features include the ability to use the 40 column Commodore 64 screen as a "window" and scroll horizontally through a wide document, and a very useful facility which allows access to name and address data stored in 'Superbase' 64 files.
Features a 32,000 word vocabulary, choice of English or American English spelling and the ability to add you own words.
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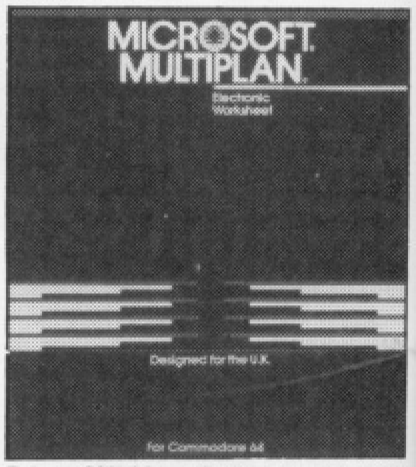
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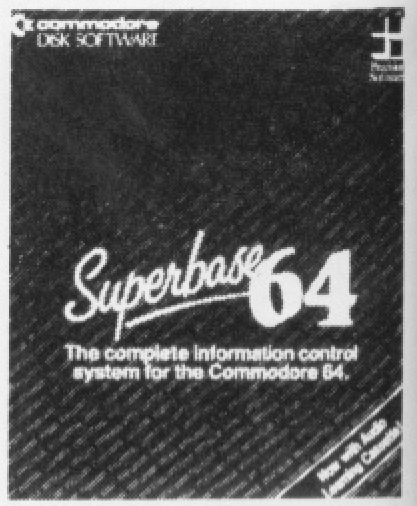
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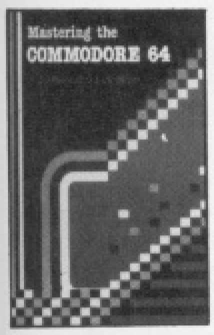
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Order code: GTH-B

Mastering the Commodore 64



Machine: Commodore 64
Publisher: Melbourne House

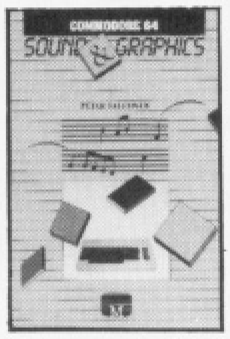
Club price: £6.95

An excellent text for the programmer who wants to get the most from his 64. All the techniques in the book are comprehensively explained and then illustrated by being used within sample programs—the book is worth getting for these alone! Just some of the subjects covered include: print formatting, logical operators, hexadecimal notation, arrays, binary search, memory management, the SID chips and envelope control, user defined characters, multicolour mode, extended colour mode, hi-resolution graphics, split-screen using interrupts..... an introduction to machine code. 383 pages packed with usable information, recommended.

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Machine: Commodore 64
Publisher: Melbourne House

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Learn all about Sound and Graphics as you work your way through the program provided—and enjoy the game you will create.
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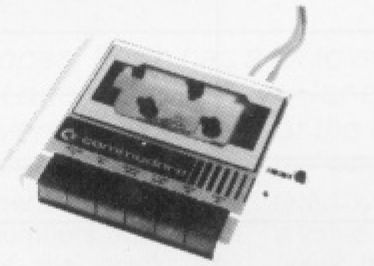
Order code: SG64-B

HARDWARE

As a result of the huge demand for hardware, we've increased our range in this issue and in February there will be even more—especially for those of you who have asked about printers. We have also had many enquiries for business software for the Commodore 64. If you use Commodore for running company accounts, payroll etc, we'd like to hear which packages you are using and how you rate them? Please drop us a line.

C2N Cassette Deck

Machine: Commodore 64/Vic-20
Manufacturer: Commodore



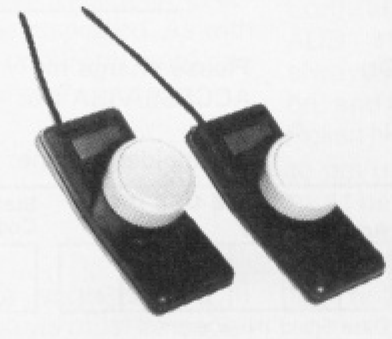
Price: £44.95 **Club price: £39.95**

The 1530 Datasette Unit Model C2N (to give it it's full title) is an essential accessory, enabling you to load pre-recorded software into your computer, as well as allowing you to record your own programs on standard cassette tapes. It has an 'auto-stop' function at tape-end, with a red light showing when data is being saved, and a footage counter to help you locate a particular file quickly. The cassette connects to your computer and receives its power through one lead only.

Order code: C2N

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Machine: Commodore64/Vic-20
Manufacturer: Commodore



Price: £13.50 **Club price: £11.45**

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Order code: PADDL

Competition-Pro Joystick

Manufacturer: Kempston



Price: £14.95 **Club price: £13.45**

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Order code: JOYST

Currah Speech 64

Machine: Commodore64/Vic-20
Manufacturer: Currah Computer Components



Price: £29.95 **Club price: £27.95**

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The Currah is an allophone speech synthesizer, using individual sounds strung together to build up intelligible speech. This is different to some speech synthesizers which have a fixed vocabulary. The Currah can synthesize *any* word in the English Language.
An invaluable aid to programmers who haven't time to look at the screen but who will soon *hear* if they hit the wrong key. (The voice can be disabled if required.)
The unit comes with a free game and demonstration cassette.

Order code: CUR64

Please read all notes carefully:

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FORTH

Developed to control radio telescopes, Forth has a lot to offer the 64 programmer — it's fast, efficient and flexible. Dave Janda *gives an overview of Fig-Forth, the version available for the 64.*

The first point to note about Forth is that it doesn't have instructions, but rather 'words'. The essential difference is that the instruction set of a language like Basic is fixed, whereas new words can be added to Forth simply by defining them in terms of existing ones. Every version of Forth comes with a set of words that make up the basic nucleus of the language, including words to perform arithmetic, screen I/O, memory operations and so on.

Forth words are held in a 'dictionary'. For example, 'VLIST' is a Forth word used to display the contents of the dictionary to the screen. In Forth any combination of words can be used to make up a program. No line numbers are used, and if a program of any real size is to be written some type of editor is used to prepare the source code.

These features are no big deal; many of them can be found in other languages, but Forth differs from others in that you're not limited to the words in the dictionary, you can make up your own!

To see how programs are constructed, look at the following:

```
: GRASP GRASP HANDLE;
: TURN TURN HANDLE;
: OPEN PULL DOOR TOWARDS YOU;
: ENTER WALK THROUGH;
: DOOR GRASP TURN OPEN ENTER;
```

The first word is the new word to be defined, and the rest is the definition itself. This isn't strict Forth, but it does show how individual words can be executed from a main word — DOOR.

So, who needs Forth? Well, it's been described by some as the high level, low level language, and by others as the ultimate programming tool: applications for Forth programs range from games design to control applications, such is its flexibility.

Soft Stack

The concept of the stack is fundamental to Forth programming. Practically every operation in Forth affects the stack in one way or another, down to simple operations like adding two numbers together.

The stack is an area of memory which is used as a temporary storage space for numbers. The stack operates on a First In, Last Out basis. Any numbers added to it increase the size of the stack, any numbers removed from it (by printing them, for example) reduce its size.

Placing — or pushing — numbers onto the stack is very simple — to put 10 on the stack simply enter

```
10 <RETURN>
```

More than one number can be placed on the stack at a time,

```
1 234 22 2 <RETURN>
```

This would also enter the four numbers on the stack. Remember, the stack operates in a first-in last-out principle, so our stack looks like this:

```
TOP       2
         22
        234
          1
BOTTOM   10
```

To display the top item of the stack the Forth word '.' (pronounced 'dot') is used. This removes the top item of the stack and prints it to the output device — CRT, printer or whatever. So if we enter . <RETURN> then 2 will be displayed. As with numbers, more than one Forth word can be entered on each line of input so

```
. . . . <RETURN>
```

would display

```
22 234 1 10
```

A couple of points worth bearing in mind: first, all Forth words must be separated by at least one space. Second, once a value is printed, it is removed from the stack, that is, destroyed. Finally, try displaying another value by using the dot. ?STACK EMPTY should appear, which means exactly that.

Actually placing values on the stack can be done in two modes; from within the program or at run time.

```
: ADD 5 8 + . ;
```

The word ADD first places the two numbers 5 and 8 on the stack and then adds them and prints the result. However, it's more flexible to do the following:

```
: ADD + . ;
```

In this case, Forth would expect the values to be entered when the program is run. The form is 5 8 ADD. Forth would then apply the operator '+' to the values 5 and 8. The end result, though, is the same whether the values are entered in the program or at run-time.

Go Forth &

Forth requires any numbers to be operated on to be present on the stack. This is the reason for the order in which Forth arithmetic is done — that is, '1 2 ADD' instead of '1+2'. The operator always follows the numbers it is to work on, and this method is known as Reverse Polish Notation (RPN). It takes some time to get used to, but remember that Forth must have numbers to operate on before any calculations can be done. Here are a few expressions in standard algebraic (infix) notation and their RPN (postfix) equivalents:

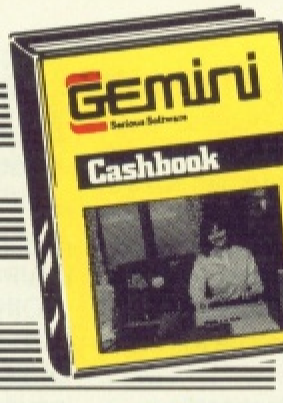
FORTH FACTS

Forth was written during the 1960s by Charles H. Moore. Moore was working on using computers to control machinery. He found that neither of the two main programming languages of the time, Fortran and Algol, were particularly suited to the task, so he decided to write his own language specifically for this one area.

Perhaps the best-known application of the language is the control of radio telescopes. One of the earliest major Forth-controlled systems was the National Radio Astronomy base at Kitt Peak, Arizona, where it is still in use today. Other astronomers began using the language, including the radio observatory at Jodrell Bank, and its popularity grew rapidly from there.

The primary advantages Forth offers to the hobbyist are speed — some Forth programs running almost as fast as machine code — and flexibility, the user able to define new keywords as required.

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FORTH

A+B–C	A B + C –
(A+B)*C	A B + C *
A*B–C/D+E	A B * C D/–E +

Numbers that are placed on the stack can be in two forms, single or double precision. 16 bit single precision signed numbers can have a range between −32768 to +32767 whilst the unsigned numbers are in the range 0 to 65535. 32 bit double precision numbers also have two ranges, signed numbers between −2147483648 to +2147483647 and unsigned numbers between 0 and 4294967295. There is no floating point in Forth.

To distinguish between single and double precision numbers, double precision numbers have a decimal point within the number, for example 62538.34. The decimal point makes no difference to the way the number's stored, but we can make use of it. Within Forth there are several system variables. One of these is called DPL (for Decimal Point Location), and holds a number corresponding to the position of the decimal point within the double number. To access the value of DPL, two words need to be used. First, dot is used to print the value, but you must use @ to put the value of the variable on the stack.

```
: WHERE DPL @ . ;
123.45 WHERE <RETURN>
2
```

This shows that the decimal point is two places from the right of the number. The clever programmer can make use of this, and by multiplying or dividing by the right power, floating point arithmetic for the four basic operators shouldn't be too hard to implement.

Forth uses the four basic operators +, –, * and / on 16 bit numbers. Things are a little complicated for double precision as there are no corresponding words. Only 'D+', to add two double precision numbers, is defined in standard Forth, but it is possible to define new words that will cater for the other three operators (D–, D* and D/).

It is often necessary to manipulate the values of the first few places on the stack. One reason for this is that many Forth words (such as 'dot') destroy the top value of the stack, so being able to duplicate the value before destroying it would be a great help. Fig-Forth has six stack manipulation words and three associated user variables to allow the programmer to do this.

The word 'DUP' simply duplicates the top value of the stack, so if the only value in the stack was 34 'DUP' would leave 34 34. This is very handy when you want to print a value without destroying it. If you 'DUP' then '.' the stack still has the original value on top. 'DUP' can also be used with other words or itself to produce interesting results.

```
: DUBLE DUP + .;          4 DUBLE 8
: SQUARE DUP * . ;        4 SQUARE 16
: CUBE DUP DUP * * . ;    4 CUBE 64
```

(Note that we use DUBLE since DOUBLE is a Forth reserved word).

Other stack manipulation words include OVER, DROP, SWAP and ROT. OVER is similar to DUP except that it leaves a copy of the second number on the stack. Sometimes, you'll find you've got a number on top of the stack you don't need, so DROP will get rid of it. A very handy word is SWAP, which as its name implies swaps the top two values allowing you to get to the second number on the stack.

Dictionary Definitions

Strictly speaking, you don't program in Forth: you define words. To define a word, two Forth words are used to tell the system you're doing so, namely ':' and ';'. As a trivial example, say we wanted to define the word GREETING to print 'HELLO', this would be it:

```
: GREETING . "HELLO";
```

The ':' is used before the Forth word to be defined. This is then followed by the name of the word, in our case GREETING. Finally, the ';' signifies the end of the definition. This is called a colon definition, and once the ';' is entered and the return key pressed, GREETING is added to the dictionary, that is, it becomes part of Forth. From now on, to print HELLO simply enter GREETING.

The word just defined can be used like any other word in the Forth dictionary, even within other words:

```
: MESSAGE GREETING . "HOW ARE YOU!" ;
```

The new word MESSAGE uses GREETING, and whenever MESSAGE is executed GREETING will be too.

Basic has the good old FOR . . . NEXT loop and Forth has the DO . . . LOOP. Here is a Basic program with the Forth equivalent:

```
10 FOR I=1 TO 10
20 PRINT "Y64"
30 NEXT I
```

```
: Y64 11 1 DO CR . "Y64" LOOP;
```

A couple of things should be noted. First the end value of the DO LOOP is always set one above the end, secondly the word CR is equivalent to the PRINT statement — it forces a carriage return and line feed.

The Basic example uses the variable I as an index. A DO . . . LOOP in FORTH uses a 'hidden' index, which can be accessed. The Forth word 'I' copies the value of the index to the stack where you can do with it what you will:

```
10 FOR I=1 TO 1000
20 PRINT I
30 NEXT I
```

```
: COUNT 1001 1 DO CR I . LOOP;
```

As well as being able to increment the loop index by one (the default), it is possible to change the step and increment or decrement desired.

Standard Fig-Forth Words.

Stack manipulation
DUP DROP SWAP OVER ROT — DUP >R R> R SO SP! SP@

Comparison
<=> 0 0=

Arithmetic
+ D+ – 1+ 2+ */ MOD/MOD*/MOD*/U* U/ MAX MIN ABS DABS MINUS DMINUS AND OR XOR

Memory
@! C@ C! ?+! MOVE CMOVE FILL ERASE BLANKS

Control structures
DO . . . LOOP I DO . . . +LOOP LEAVE IF . . . ENDIF IF . . . ELSE . . . ENDIF BEGIN . . . UNTIL BEGIN . . . WHILE . . . REPEAT EXECUTE

Terminal I/O
. . R D. D.R. CR SPACE SPACES." DUMP TYPE COUNT — TRAILING STERMINAL KEY EMIT EXPECT WORD

Conversion
BASE DECIMAL HEX NUMBER <£ £ £s HOLD SIGN £>

Storage (often differs between systems)
LIST LOAD BLOCK B/BUF BLK SCR UPDATE BUFFER FLUSH EMPTY-BUFFERS

Word defining
: ; VARIABLE CONSTANT ; CODE <BUILDS . . . DOES>

Vocabularies
CONTEXT CURRENT FORTH EDITOR ASSEMBLER DEFINITIONS VOCABULARY ' VLIST FORGET.

Compiler
, C, ALLOT IMMEDIATE LITERAL STATE COMPILE

Forth consists of a number of pre-defined keywords. The standard Fig-Forth words are shown above. The Forth programmer can define further words using the standard set to create a vocabulary limited only by memory. For example,

```
: SQUARE DUP * . ;
```

defines the word SQUARE to multiply a number by itself. Thus 2 SQUARE produces the result 4. This ability to define new keywords makes Forth one of the most flexible languages available on the 64.

FORTH

In Basic, and other languages, it is often handy to use nested loops. This is allowed in Forth, but Fig-Forth doesn't allow you to access the index of the outer loop — normally. But the following definition will:

```
: J R> R> R> R SWAP >R SWAP >R SWAP
>R;
```

It is now possible to access the index of an outer loop:

```
10 FOR J=1 TO 10
20 FOR I=1 TO 10
30 PRINT I;" ";J
40 NEXT I
50 NEXT J
```

```
: INDEX 13 1 DO 13 1 DO CR I . J . LOOP LOOP;
```

Fig-Forth has a number of control structures as well as a number of comparison words. The simplest of these control structures is the BEGIN . . . UNTIL, which repeats actions until a condition is met. Finally, Forth also has two variations of the IF . . . THEN construct. The first is similar to the Basic equivalent but the order of things is not! The Forth structure is: condition IF action ENDIF. So the test is done before the IF rather than after it. An example of this is:

```
10=IF . "EQUALS TEN" ENDIF
```

The second form includes the ELSE: condition IF action1 ELSE action2 ENDIF.

Forth In Focus

An organised approach to programming is required when working in Forth, which is a good thing. A good deal of planning is required and the language encourages top-down (modular) programming.

Those of you who use languages that don't allow direct control of the stack may be horrified at the thought of Forth, but there's no need to be. The ability to manipulate the stack gives greater control and flexibility. The only real problem is that it's all too easy to crash the system.

The lack of floating point arithmetic is no problem at all. Many commercial applications that manipulate pounds, shillings and pence do so with integer arithmetic. If you need floating point, the required words can be defined without too much difficulty. For those who can't be bothered to write the necessary words, many Forth packages come with the option of floating point extensions.

For us 64 users, practically all the Forth packages available have words to use colour, sound, and graphics — including sprites. Graphic games that run many times faster than the Basic equivalent can be written simply because Forth is a very fast language. Romik Software's Fig-Forth is particularly fast, though it achieves this speed by sacrificing some of the more sophisticated features supported by other packages.

In some ways, Forth is similar to machine code: it's a 'fiddly' language, demanding that the programmer control the machine at system level, but makes up for this by its speed and efficiency. But where Forth really comes into its own is in its flexibility — the ability to define keywords as and when required. This, if nothing else, should recommend it to hackers.

FORTH'S CURRENTLY AVAILABLE FOR THE 64

64 Forth (Hesware:)
White Lightning (Oasis Software: 0934 419921)
C64 Forth (Handic Software: 0344 778800)
Forth 64 (Audiogenic Ltd: 01-290 6044)
Tiny Forth (Adamsoft: 0706-524304
Melbourne Forth (Melbourne House: 01-940 6064)
Fig-Forth (Romik Software: 0753 71535)

USER GROUPS

Forth Interest Group
PO Box 1105
San Carlos
CA 94070
USA

Fig UK hold regular meetings in London at the South Bank Polytechnic. Membership entitles you to attend these as well as receive FORTHWRIGHT, the group's newsletter.

Keith Goldie-Morrison
Membership Secretary Fig (UK)
15 St Albans Mansion
Kensington Court Place
London W8 5QH

ACTION REPLAY

No. of players | Joystick | Joystick optional | Cassette | Disk

FLYERFOX
Tymac/£14.95 disk £9.95 cassette

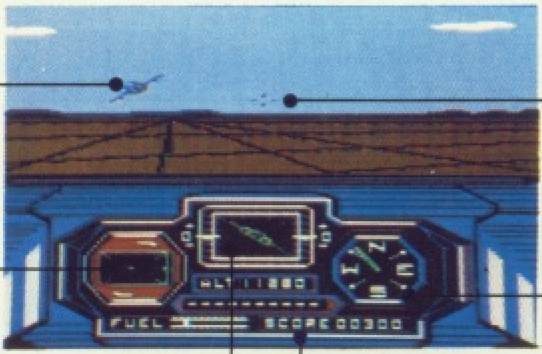
This month's Golden Gas-chamber award for tastelessness above and beyond the call of duty goes to Tymac's Flyerfox. The object of the game is to escort a commercial airliner through disputed airspace and fend off attacks by MiG 25 fighters. Cash in on Korean air disasters while stocks last and avoid the rush.

This is in fact a pity because the airliner scenario, apart from being gratuitous, actually detracts from the game itself. Flyerfox is basically a good old fashioned flight simulator with a fire button. The graphics are wonderful, the joystick control is nippy and then, of course, there is the sound.

The major selling point of this game — and other Tymac games still in the pipeline — is the inclusion of a software-based speech synthesiser (that's a speech synthesiser without the expense of an interface to you, John).

OK, so it sounds like a dalek with a cold, but the words are still decipherable and it adds that elusive touch of realism to the game. Anyway, the speech in Flyerfox is supposed to be a short wave radio transmission which are notorious for their Lo-Fi.

Realism is also a keyword in the



dogfights. The enemy fighters are as slippery as fish. When you finally do get a fix on them, a bleeper sounds and you can release your heat-seeking missiles — which may or may not find their target. I suspect that the programmers consulted real fighter pilots on this aspect of the game — it's that convincing.

Less convincing is the airliner. You only ever see the back end of it, you can't overtake it to engage the enemy and it can't land but only be shot down. This means that from the beginning you know you're chasing a doomed Jumbo, which somehow takes away some of the satisfaction of the game!

Flyerfox will sell and sell. I only wish they had chosen a different scenario.

ERIK THE VIKING
Mosaic Publishing/£9.95



Norse game, shame about Erik.

From one horned beast to another. The Saga of Erik the Viking is based on a book by Terry Jones of Monty Python.

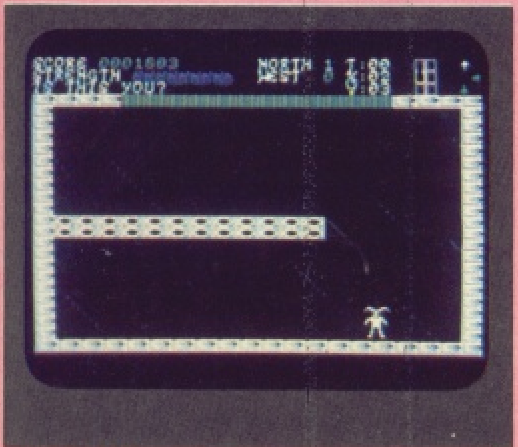
In this story of everyday nordic folk you, as Erik the Viking, must take time out from your usual simple pursuits of raping and pillaging to rescue your kidnapped family. Along the way, you discover a ship called the Golden Dragon crewed by an unsavoury bunch with names like Sven the Strong, who sings of gold as simple vikings are wont to do.

You set sail to a rocky shore where you enter a passage. Up until now, life has been fairly easy — not at all the kind of brain bender we have come to expect from Level Nine. Poor fool, this is where the trouble starts.

From now on things start to get sticky, and the only advice from the Help command is to write off to Mosaic for a cluesheet (thanks, Mosaic). Should keep the Post Office busy, I suppose.

This is a nice little game in the mould of the Hobbit. The graphics consist of static scenes. These are pleasant enough for all that, although the program is a bit slow to draw them on the screen. Still, worthwhile enough and will probably encourage people to buy the book (which is probably the whole point).

ANCIPITAL
Llamasoft/£7.50



Goat to exit

First off we have the latest invitation from Jeff Minter to perform unnatural acts with furry animals. In this game you play the part of the Ancipital — half man, half goat and mutant camel (it says here). With Ancipital, Jeff has bowed to the inevitable pressure to produce an adventure-style arcade game with assorted rooms for you to visit, and meet all the weird and wonderful things to shoot at that we've come to expect from Llamasoft.

After, for example, loading the program into RAM (geddit? Oh, please yourselves), you find yourself shooting bananas at attacking apples. In another room guinea pigs drop multi-coloured unmentionables you. I worry about Jeff Minter.

Passing through a wall, you get an extra three camels worth of strength, and the object of the game's to neutralise all of the rooms. As in most such games there are things to be picked up — in this case, six key camels and five goats of power.

What can I say? Ancipital is another winner from the man that brought you Mutant Camels, but I do wish he wouldn't foist quite so much of his acid ramblings on us. Someone call a doctor. On second thoughts, make that a vet.

HEADACHE
Firebird/£2.49



Soft in the head

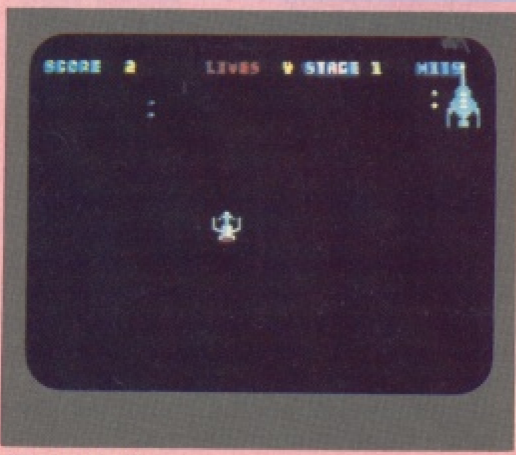
Headache is a game where you as nervous Ned have to take various thoughts, etc, to and from the brain. As Ned is brought to you by Firebird, a subsidiary of British Telecom — that of crossed lines and misdirected calls fame — you can see that Ned is a man with problems.

On his travels, Ned has to avoid the Throbs as they spill down from the brain (I know the feeling) and prevent the Headbanger (Hi, Jeff) from reaching the brain and causing migraine-inducing graphics.

The screen consists of a head containing the usual platforms and ladders (*it's usual for heads to contains platforms and ladders?? Ed*). There are eight levels of play to choose from, which merely consist of the head getting bigger, reflecting the personality of someone attempting a higher level. Actually, I found the higher levels easier as there was more room to move about.

Despite the hype in the title screen about this game being highly addictive, I found it entirely forgettable. Headache has nothing new to offer anyone. The ladders were thin and awkward to get up. The brain at the top was very small, probably indicating the imagination of the programmers. Brain-death nurse, reach for the life support switch.

STAR RACE
Mastertronic/£1.99



Cheap thrills

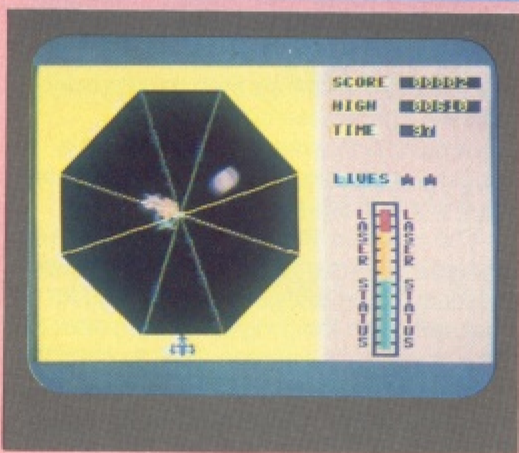
Star Race retails at £1.99.

Having got the good points of the game over with, let's get on with the review. There are five 'zones' for you to guide your spaceship through, each one as naff as the previous one. In the first level you end up being chased around the screen by sprites. In the second level you have to avoid an asteroid swarm — easy for anyone who has been avoiding galaxians and the like for any length of time. In the third you have to stay in the tractor beam of a mother ship while avoiding yet more asteroids. In the fourth you ... Look, Surya, do I really have to review this garbage? Oh, alright then.

The game is written in Basic. I know this because the first time it failed to load and I was able to list it. Mind you, I doubt whether Mastertronic is going to have many sleepless nights worrying about pirates since no-one would be interested in copying a program they could probably write better themselves.

At a time when the suspicion is that software is overpriced merely to keep certain programmers in Porsches, the aim Mastertronic is laudable but it's still a case of you get what you pay for.

EXODUS
Firebird/£2.49



Down the plughole

Next one off the stack is another offering from Firebird. Well, I thought, it can't be any worse than the last one ... ok, so I was wrong.

I'm a fair minded man. If someone has tried to insult my intelligence once I don't hold it against them, but Firebird is trying my patience. In this game (I use the word advisedly) you're supposed to move around the rim of a vortex. It's news to me that a vortex is a black hexagon. You then have to blast the assorted nasties which emerge from said Vortex. There are all the usual kind of 'wacky' sprites you might expect from the pea-brained imagination of the people who wrote this nonsense. It's even got mutant camels in it — there's originality for you.

The rumour appears to have got round many software houses that there's a killing to be made by regurgitating the half-digested remains of other people's ideas. I've news for these people: *Y64* readers are not that stupid.

It's bad enough that I have to sit through this garbage; I'd hate to think anybody else might do the same.

The best vortex you'll get out of this game is by flushing it down the pan.

RIVER RAID
Activision/£9.99



Making a splash

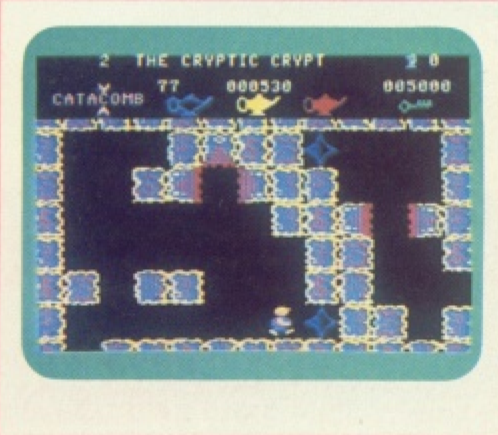
If people must copy ideas, they can at least do it properly and if possible add something to the game. River Raid is an example of the acceptable face of theft. It's a variation on that hoary old chestnut River Rescue, a game that I was never particularly fond of, but something of a classic in its day.

The idea is that you fly a plane, which banks and swerves nicely along a river, picking up fuel tanks and blasting away at the various bridges, hot air ballons, submarines, etc. You crash if you fly into the shore or the enemy craft. (I've heard of low-level flying, but crashing a plane into a submarine?)

As you progress up the levels, the river gets narrower and the enemy turns nastier and starts shooting back at you (damn cheek). The relative positions of fuel, shore and nasties gets more awkward making life that much harder. The graphics are not going to set the world alight, but are smooth and control is easy. I found the game more interesting than the original. It should keep joystick jockeys reasonably entertained, which is more than can be said of most of the stuff reviewed so far.

ACTION REPLAY

CUTHBERT ENTERS THE TOMBS OF DOOM
Microdeal/£6.95



A tomb with a view

Microdeal's answer to Alfred E Neuman stars in Microdeal's answer to Atic Atac. Cuthbert Enters the Tombs of Doom, is one of those games where you wander round various rooms collecting treasure (which in my day used to be called burglary) avoiding invitations from the assorted ghosts and sadistic saxophones, to join their club. As well as treasure hidden in the walls, there are also keys to be collected to get you through the locked doors into other rooms full of goodies. You often can't carry more than one key at a time so you're obliged to open one door and then go back and get another key. This, of course, involves a deal of to-ing and fro-ing. Still, all good knockabout fun.

There are, of course, extra points for blasting the ghosts. However, the blaster only works from side to side. This is a decided disadvantage if you are attempting to go up or down a corridor full of ghosts!

When the inevitable happens, and you are touched by a ghost, you'd better hope your energy lamps are full else you lose a life.

Apart from a few quirks, this isn't a bad little arcade adventure and is cheaper than a lot of similar games.

FIREQUEST
The Edge/£9.95



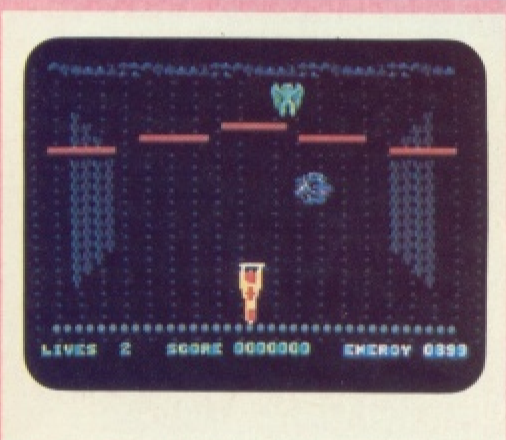
The thinking man's arcade game

Back in the days when homo sapiens was just a gleam in Arthur C Clarke's eye, life was not a bed of roses. In fact, spending some time with Ugh, the hero of Firequest makes you wonder how man could spare the time to evolve into the pinnacle of creation that you yourselves are.

The trails of Ugh are billed as a series of adventures which they ain't. What they are is a series of tricky arcade games. You must guide Ugh through his everday business (collecting firewood, swinging on creepers to collect fire from the volcano and bring it back to the cave — that sort of thing) while avoiding all manner of primeval perils, such as lightning and sabre-toothed tigers. And all without so much as a club to protect you.

The background graphics are rather crudely drawn, although Ugh himself is a rather handsome fellow as befits the father of humanity. The game is good and fast and the controls are responsive and easy. Mind you, they need to be the way those giant spiders move. But being fast on the joystick isn't enough and the player has to develop a strategy to get past the obstacle then run like hell.

STORM WARRIOR
Front Runner/£7.95



Rider on the storm

Meanwhile, back at the sword and sorcery, the Storm Warrior prepares to do battle. Armed only with a neon light bulb borrowed from the Return of the Jedi, he needs no allies, his strength and agility will prove him worthy. 'Ere, is he talking about me?

Yes, my son, you have been chosen to find and destroy the Sacred Skull. First you must pass the Guardian to the Light Barrier and travel to the Island of Doom. It's first on your left past the barbarian on the Bridge of Eternity, you can't miss it. Oh, and don't forget to put on clean underwear.

Actually, this game contains something you may not have come across before. It's called originality. Now don't get too worked up — there's not much, but it is there. At the first level you have to bounce this ball of light past a guardian. I know it doesn't sound much on the page, but it's really quite intriguing. From then on, it's warding off the usual D&D nasties with your bulb, I mean sword.

Not a bad little game, which is worth half an hour of your time to play, though perhaps you might think twice before buying. Still, give it a go.

ZENJI
Activision/£9.95



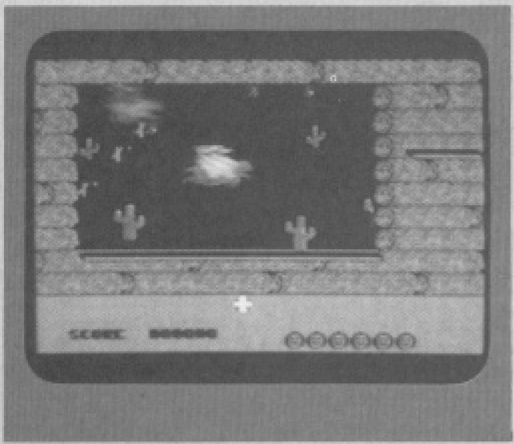
Mix & maze

'Let us see that in vast blackness, beyond the beyond, the elements assemble around the source.' Come again, Chief? It was cosmic goo like this that put me off playing this game. But Confucius, he say you must must not judge software by its insert and I was pleasantly surprised to find a very nifty little game inside.

Without resorting to the homespun Chinese philosophy left over from old episodes of Kung Fu, the game is basically this. There are bits of path scattered around the screen. The player has to spin the bits around so that they all connect to a square in the centre within a specified time. This makes it more of a logic puzzle than a game, but you don't have to be Mastermind to solve it. Of course, no maze-type game would be complete without the nasties chasing you round and this game is complete. One of these is called the 'flames of Desire' which emit illusions. This sounded interesting so I ran straight into the first one I found, but it killed you like all the rest. I was most disappointed.

After kissing so may frogs, this game is a prince. No whizz-bang graphics or aliens to stomp, just a very absorbing game.

APACHE RAID
Omega/£1.99



Hair raising action

Injuns! Form the wagons into a circle, hold on to your scalps and pour me a shot of that old Red Eye and fetch me six-shooter joystick.

As a change from the usual fare of green-skinned aliens, Omega at no extra cost bring you red-skinned Apaches to shoot. As a simple homesteader, escaping war and oppression in the old country, you have set forth to carve a new life out of the American Indian.

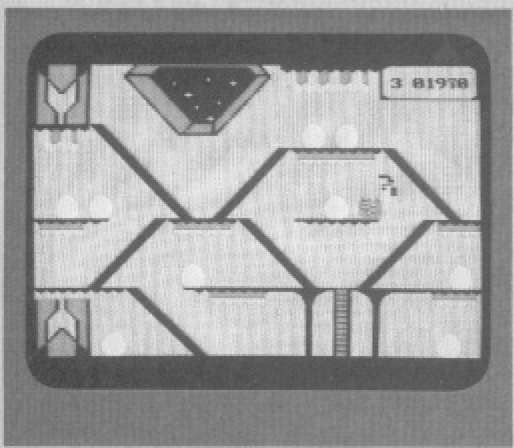
Surrounded in your log cabin with your Kinfolk (shown at the bottom of the screen as six smiling faces), you must first shoot the Indians riding past the window in true John Wayne fashion. This bit reminded me of nothing so much as potting ducks at the fair.

When Indians begin dropping in through the window, they must be hit before they hit the floor. If they get away, one of your smiling family will be scalped. This is tricky as the cursor gunsight slowly falls as you are trying to aim.

While it lasts, this is one of the most enjoyable games I've played in this month's batch. The trouble is there's not much to it. There's Indians riding past your window, and there's Indians dropping through your window and that's it.

A good game but not apache on what it could have been.

STAR EGGS
Mirrorsoft/£6.95



The yolk's on you

A game from Maxwell House (the newspaper, not the coffee). Star Eggs is based on an idea borrowed loosely from Alien. You, as an intrepid starship captain (not another one!), must save the Earth from being destroyed by yet more ghastly aliens.

So, stifling a yawn you press the fire button and away you go. The first scene in this unknown involves charging around trying to destroy the guardian ships. The trouble is, whoever built your ship forgot to fit the brakes, which means you develop this tendency to shoot past the aliens before you get a chance to aim at them. Not only that, but if you haven't blasted them within a certain time they get impatient and start flapping their wings at you.

Once you've shot down (or crashed into) three ships, you find yourself on the mother (or should that be hen?) ship. Then it's up and down the now-traditional platforms destroying the eggs before they hatch.

Should any of the eggs hatch, small pterodactyl-type things emerge and shoot at you before flying out of the window to destroy the earth, and civilisation as we know it and so on.

The graphice programming is workmanlike, but sadly bereft of ideas. You'd be cracked to shell out for this.

ZIM SALA BIM
Melbourne House/£9.95



Turkish delight

Continuing in the Melbourne House tradition of producing high quality now-get-out-of-that type games, the latest offering from the sign of the red hat is Zim Sala Bim.

There is, of course, the usual collection of brain-bending puzzles. By way of a change, this one also comes with three dimensional graphics and the character of Zim Sala Bim who wanders around the desert and the palace looking gormless. It's your job to get him in and out of the palace with Sultan's treasure without getting him killed.

The adventure starts off outside the palace walls and the first task is to actually get inside. The way in is not immediately obvious to say the least and if I hadn't been told how to do it, I'd probably have taken several days over the problem.

Don't let that put you off (I'm lousy at this sort of thing anyway); the crafty player with plenty of patience will probably get great satisfaction out of solving the problems.

A good game to play over the Christmas period when you've had enough of the turkey and the relatives. Another winner from Melbourne House.

BEST OF THE REST

Turbo 64, from Limbic systems, is a racing car simulation. I was unable to try this one due to the Limbic's paranoia which requires players to go through some absurd anti-piracy routine before being allowed to play the game they have shelled out money for (£7.95 to be exact).

From Firebird, whom we all know and love, comes **Zulu**, a tuppenny ha'penny cross between Pacman and Sabre Wulf. For review, read about the other firebird products above: **Zulu** is of the same standard.

The Stainless Steel Rat Saves the World is another of those you've-read-the-book-now-play-the-game adventures. In fact you get the book thrown in. Steel hard.

Raves from beyond the grave, **Ah Diddums** is a toytown game from the defunct Imagine. At £5.50 not as bad as I thought it would be, but would you be heard asking a shop assistant for Ah Diddums? **BC Bill** (also £5.50) is more stoneage software. Collect wives and food, avoid dinosaurs, bring up babies. Ah, the simple life. Frenetic but tedious.

Catastrophes from Mirrorsoft (£6.95) is a sort of software disaster movie. The idea is to build a hotel on an island paradise while avoiding earthquakes, floods, lightning and storms. Island paradise?? Roll on next month.

For those who have had enough of these new fangled games, Superior Software have brough out **Chess** and **Draughts** both at £7.95. Interested readers will be happy to know your humble reviewer managed to slaughter the computer at both (although the Chess program had me on the ropes for a while).

While we are on the subject of old fashioned games, Live Wire have brought out some games called **Invaders** at £6.50. If you can guess which well known arcade game this is based on, please send the answer on a postcard to Sunlock, Deansgate, Manchester. Oh Gawd! Nostalgic software. I give up!

Computerama 64

the source

ACTIVISION

Beam Rider	C	9.95
Decatholon	C	9.95
Hero	C	9.95
Pitfall	C	9.95
Zenji	C	9.95

ALLIGATA

Blagger	C	7.95
Guardian	C	7.95
Loco	C	7.95
Panic Planet	C	7.95
Son Of Blagger	C	7.95

A&F

Chuckie Egg	C	7.90

ADVENTURE INTERNATIONAL

Pirate Cover	C	9.90
Voodoo Castle	C	9.90

ANIROG

PC Fuzz	C	7.95
Zarga Mission	C	7.95
Catacombes	C/D	9.95/ 11.95
Flight Path 737	C	7.95
Krazy Kong	C/D	7.95/ 9.95
House Of Usher	C/D	6.95/ 9 9 5
Moon-Buggy	C/D	7.95/ 9.95
Cybotron	C/D	7.95/ 9.95
Petch	C/D	6.95 9.95
Ice Hunter	C/D	6.95/ 9.95
Zodiac	C/D	7.95/ 9.95

AUDIOGENIC

Linkword Language Tapes	C/D	9.95/ 12.95
Motor Mania	C	8.95
Bonzo	C	8.95
Burnin Rubber	C	8.95
Pegasis	D	12.95
Frantic Freddie	D	12.95
Grand Master Chess	C	8.95
Alice In Video Land	D	12.95

AVS

System 1500	C	12.95

U.S. GOLD

Forbidden Forest	D/C	12.95/ 8.95
Caverns Of Khafka	D	12.95
Aztec Challenge	D/C	12.95/ 8.95
Slinky	D/C	12.95/ 8.95
Pooyan	D/C	12.95/ 9.95
O'Rileys Mine	D/C	12.95/ 9.95
Beach-Head	D/C	12.95/ 9.95
Solo Flight	D/C	14.95
Gustbuster	C	9.95
Quest For Quintana Roo	C	9.95
Rolloverture	C	9.95
Dallas Quest	D	14.95
Mystic Mansions	C/D	8.95/ 12.95
Strip Poker	C/D	9.95/ 12.95
Snowki	D	14.95
Flak	D	14.95
Bruce Lee	D	14.95
Spitfire Ace	C/D	9.95/ 12.95
F15 Strike Eagle	C/D	14.95
Nato Commander	C/D	9.95/ 12.95

BUG-BYTE

Twin Kingdom Valley	C	9.95

C.D.S.

Colossus Chess 2.0	C/D	12.95

CREATIVE SPARKS

Black Hawk	C	7.95
Slurpy	C	7.95
Tower Of Evil	C	7.95

DURRELL

S c u b a D i v		6.95
Harrier Attack	C	6.95
Jungle Trouble		6.95

EUROBYTE

Mr Mephisto	C	6.95

GILSOFT

The Quill	C	6.95

GREMLIN GRAPHICS

Wanted: Monty Mole		

IMAGINE

Cosmic Cruiser	C	5.50
Pedro	C	6.90

INCENTIVE

Splat!!	C	6.50

INTERCEPTOR

Arabian Knights	C/D	7.00/ 9.00
Trolley Wally	C	6.95
Spider & The Fly	C/D	7.00/ 9.00
China Miner	C/D	7.00/ 9.00
Wheelin Wallie	C/D	7.00/ 9.00
Burger Time	C/D	7.00/ 9.00
Aquanaut	C/D	7.00/ 9.00
Wallie Goes To Rhymeland	C/D	7.00/ 9.00

K-TEL

City Attack	C	6.95
It's Only Rock-n-Roll	C	6.95

LLAMASOFT

Mega Galactic Llamas	C	5.50
Mutant Camels	C	7.50
Mutant Camels Revenge	C	7.50
Sheep In Space	C	7.50

LEGEND

Valhalla	C	14.95
The Great Space Race	C	14.95

MERLIN

Wimbledon 84	C/D	7.95/ 9.95
Pixie Pete	C	7.95
Orange Squash	C	7.95

MELBOURNE HOUSE

Hobbit	C + B	14.50
Acos +	C + B	8.95

MICRO POWER

Cybertron Mission	C/D	7.95
Felix In The Factory	C/D	7.95
Ghouls	C/D	6.95/ 9.95
Swoop	C/D	7.95

MIRRORSOFT

Caeser The Cat	C	8.95

OCEAN

Gilligans Gold	C	6.90
Android II	C	6.90
Eskimo Eddie	C	6.90
Johhny & The Jimpys	C	6.90
High Noon	C	6.90
Stunt Bike	C	6.90
Daley Thompsons Decathlon	C	7.95
Hunchback	C	6.90
Mr Wimpy	C	6.90
Chinese Juggler	C	6.90
Cavelon	C	6.90
The Evil Dead	C	7.95

PARAMOUNT

Outback	C	7.50
Meggawarz	C	7.50

PEAKSOFT

The Boss	C	8.95
Timmy Loves Cricket	C	8.95

PSS

Battle For Medway	C	9.95
Hyper Bike	C	7.95

QUICKSILVA

Bugaboo The Flea	C	7.95
Epics Summer Games	C/D	14.95/ 19.95
Trashman	C	7.95
Fred	C	7.95
Traffic	C	7.95
Ant Attack	C	7.95

RICHARD SHEPHERD

Urban Upstart	C/D	6.50/ 9.50

RUN 100

Hercules	C	6.95

SOFTWARE PROJECTS

Manic Miner	C	7.95
Dinky Doo	C	7.95

STATESOFT

Astro Chase	C/D	8.95/ 10.95
Flip Flop	C/D	8.95/ 10.95

S/W PROJECTS

Jet Set Willy	C	7.95

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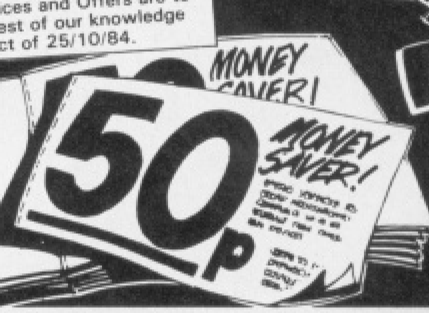
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One of the most useful aids to writing friendly programs is a technique known as windowing or split-screen scrolling. This involves splitting the screen into several independent sections. In an adventure, for example, the main section would be the 'conversation', another might be a limited map, another might be an inventory and yet another the score. Brian Rushby *presents a utility to faciliate windowing in your own programs. This month we begin with the machine code generator and the down scrolling programs. The demonstration programs for scrolling up, left and right will be published next month.*

Split-Screen Scrolls

If you've ever wanted to create scrolling windows on the 64 and given up because of the lack of information on the subject, this suite of machine code programs by Brian Rushby is just what you need.

The Programmers' Reference Guide informs us that, although the VIC II chip will perform the smoothing of the scroll, the scroll itself must be carried out using a machine code program. The purpose of these programs is not only to provide the required screen shift utilities, but also to provide a facility for scrolling selected areas of the screen.

Using the demonstration programs, you'll be able to define whether you want the whole screen scrolled or just a selected part of it, leaving stationary sections for permanent or replaceable text. The routines can then be used in your own programs as will be shown later.

The smoothing action of the VIC II chip has been omitted from these programs since the only way to use it effectively is to use raster interrupt techniques. However, a flicker-free scroll is obtained by setting the scrolling register to a maximum or minimum value as required to provide a mask behind which the new data is to be PRINTed or POKEd. The colour memory is, of course, scrolled in unison with the screen memory.

It's worth noting that a full screen scroll in Basic would require about 2000 PEEKs and POKEs — one good reason for using machine code!

The machine code loader

This simple listing shows how the machine code program should be loaded after it has been generated. It is, in effect, just three lines (the REMs can be omitted). The easiest way to use it is to omit the END statement and make it the first three lines of your own program.

The routine needs to be saved onto disk or tape. If using tape, position it just before the machine code generated by the following program.

```
60 LD=LD+1
70 REM USE LINE 80 IFLOADING FROM DISC:DELETE LINE 100
80 IFLD=1THENLOAD"SCROLL M/C",8,1
90 REM USE LINE 100 IF LOADING FROM CASSETTE:DELETE LINE 80
100 IFLD=1THENLOAD"SCROLL M/C",1,1
120 END
```

The machine code generator

This Basic program generates the machine code, and then gives the option to save the code to tape or disk. A checksum facility is incorporated to ensure that the program is generated correctly. This listing should be typed in (REM statements may be omitted) and saved to tape or disk as a BASIC program before RUNning (it's always a good idea to SAVE programs before RUNning them).

If using tape, the Basic Program itself should be saved on a different tape or on the reverse side of the machine code loader above. The machine code generated by this program should be saved just after the above machine code loader on the same tape.

When you RUN the program the code-generation will take a little time. You'll be informed of any typing errors and, once you've corrected these, given the option to save the code to tape or disk. The program will be saved under the name SCROLL M/C.

If the machine code is not successfully generated, you'll be told which line number is incorrect. Do *not* correct the version in RAM, but switch off and on to reset, reload the saved version and correct and resave this before attempting to re-run. That way you're safe in case the faulty listing causes the machine to lock up.

```
60 PRINT"J":POKE53280,2:POKE53281,2
```

Line 60 Sets the screen and border colour.

```
65 M=49151
```

Line 65 Sets the start of memory.

```
70 FORI=1000TO1520STEP20
75 X=0
80 FORJ=1TO14
85 READQ:X=X+Q:M=M+1:POKEM,Q
90 NEXTJ
100 READC:IFC<>XTHENPRINT"■■   ERROR IN LINE   ■";I:END
110 NEXTI
```

Lines 70-110 Two loops, one to read DATA one line at a time and POKE it into memory, one to move to the next line and perform a checksum.

```
200 PRINT"J■  M/C DATA NOW GENERATED SUCCESSFULLY"
210 PRINT"■■■■ DO YOU WANT TO SAVE TO CASSETTE OR DISC"
215 PRINTSPC(15)"■TYPE ■C■ OR ■D■"
220 GETA$:IFA$=""THEN220
225 IFA$<>"C"ANDA$<>"D" THEN220
230 IFA$="C"THEN250
```

Lines 200-230 Informs the user of a successful RUN and gives the option to SAVE to disk or tape.

```
235 POKE44,191:POKE43,254:POKE46,193:POKE45,119
240 SAVE"SCROLL M/C",8,1
245 POKE43,1:POKE44,8:GOTO900
```

Lines 235-245 SAVE to disk option.

```
250 PRINT"■■■■    PLACE TAPE IN RECORDER AND WIND"
260 PRINT"   ON UNTIL JUST AFTER THE RECORDING"
270 PRINT"                 OF LOADER"
290 PRINT"■■■■■■■■■■PRESS ANY KEY WHEN YOU ARE READY■"
300 GETA$:IFA$=""THEN300
310 POKE44,191:POKE43,254:POKE46,193:POKE45,119
320 SAVE"SCROLL M/C",1,1
330 POKE43,1:POKE44,8
350 PRINT"■■■■■■■■■■■■■■■PROCESS COMPLETED"
360 PRINT" REWIND TAPE TO BEGINNING OF LOADER AND"
370 PRINT"    TURN COMPUTER OFF/ON TO RESTORE"
380 PRINT"          PRESS SHIFT/RUN TO START"
900 END
```

Lines 250-900 SAVE to tape option.

```
1000 DATA173,255,207,133,251,133,253,169,7,133,252,169,219,133,2487
1020 DATA254,162,0,160,0,232,177,251,160,40,145,251,160,0,1992
1040 DATA177,253,160,40,145,253,236,254,207,208,18,56,162,0,2169
1060 DATA165,251,237,253,207,133,251,133,253,176,4,198,252,198,2711
1080 DATA254,56,165,251,233,1,133,251,133,253,176,4,198,252,2360
1100 DATA198,254,165,252,201,3,208,195,24,96,173,252,207,133,2361
1120 DATA251,133,253,169,4,133,252,169,216,133,254,162,0,160,2289
1140 DATA40,232,177,251,160,0,145,251,160,40,177,253,160,0,2046
1160 DATA145,253,236,251,207,208,18,24,162,0,165,251,109,250,2279
1180 DATA207,133,251,133,253,144,4,230,252,230,254,24,165,251,2531
1200 DATA105,1,133,251,133,253,144,4,230,252,230,254,165,252,2407
1220 DATA201,7,208,195,24,165,251,105,64,144,188,24,96,169,1841
1240 DATA0,141,242,207,173,249,207,141,246,207,173,248,207,141,2582
1260 DATA245,207,173,247,207,141,244,207,24,173,246,207,105,1,2427
1280 DATA133,251,133,253,141,246,207,144,6,238,245,207,238,244,2686
1300 DATA207,173,245,207,133,252,173,244,207,133,254,162,0,232,2622
320 DATA160;1,177,251,160,0,145,251,160,1,177,253,160,0,1896
```

```
340 DATA145,253,24,165,251,105,40,133,251,133,253,144,4,230,2131
1360 DATA252,230,254,236,243,207,208,219,238,242,207,173,242,207,3158
1380 DATA201,39,208,176,96,169,0,141,234,207,173,241,207,141,2233
1400 DATA238,207,173,240,207,141,237,207,173,239,207,141,236,207,2853
1420 DATA56,173,238,207,233,1,133,251,133,253,141,238,207,176,2440
1440 DATA6,206,237,207,206,236,207,173,237,207,133,252,173,236,2716
1460 DATA207,133,254,162,0,232,160,0,177,251,160,1,145,251,2133
1480 DATA160,0,177,253,160,1,145,253,24,165,251,105,40,133,1867
1500 DATA251,133,253,144,4,230,252,230,254,236,235,207,208,219,2856
1520 DATA238,234,207,173,234,207,201,39,208,176,96,0,0,0,2013
```

Line 1000 DATA for machine code.

Once the macnine code data has been successfully generated this Basic program need not be used again. All work can now be carried out using the machine code program itself.

The demonstration programs

The demonstration programs show how the machine code scrolling subroutines can be used in your own programs. They're all very similar, so you may find it more convenient to type one in, save it and then edit it to create the others. The demonstration programs can be saved to disk or tape. If saving to tape, we recommend that you save them along with the machine code generator Basic program.

The margin positions are defined here as the extreme edges of the scrolling area. For example, entering 10 and 20 means that positions 11-19 will scroll. To scroll the whole screen vertically (for instance) you would need to enter 41 for the right margin and 0 for the left.

An itemised breakdown of the demonstration program lines above 145 is given below with an indication of how to use the m/c scroll routines in your own programs.

Ideas

Now you've got the suite of machine code subroutines and seen the demonstrations, the possibilities are limited only by your imagination!

It's possible, for example, to have two or more columns scrolling at the same time, in the same direction, in opposite directions, crossing, at the same speed or at different speeds. The sizes of the scrolls can be different and they can overlap. It's also possible to have one column inside another, either moving in the same direction at different speeds or moving in the opposite direction!

Please note that the machine code routines use the memory locations 53247-53226 ($CFFF — $CFEA) for their own purposes, so steer clear of these locations in your own programs.

DOWN SCROLL

```
50 A$="1234567890123456789012345678901234567890■"
60 B$="0         1         2         3         4"
70 C$="■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■"
```

Lines 50-70 Defines the variables used to PRINT margin scaling.

```
80 POKE53280,14:POKE53281,6
```

Line 80 Sets border and screen colours.

```
90 PRINT"■■"
95 PRINTA$+B$
```

Lines 90-95 Clears screen and PRINTs scales.

```
100 INPUT"■■■■■■INPUT RIGHT MARGIN 1-41 ■■■■■";R
105 IFR<1THENPRINT"■■■■■■■■NO SCROLL ?■      ":GOTO100
107 IFR>41THENPRINT"■■■■■■■■SCREEN MARGIN=41 MAX■":GOTO100
108 IFR=41THENPRINT"■■■■";LEFT$(C$,39);"■>■":GOTO110
109 PRINT"■■■■";LEFT$(C$,R-1);"■↑■"
110 INPUT"■■■■■■■■INPUT LEFT  MARGIN 0-39   ■■■■■";L
115 IFL>39THENPRINT"■■■■■■■■■NO SCROLL ?■      ":GOTO110
117 IFL<0THENPRINT"■■■■■■■■■SCREEN WIDTH =0 MIN■":GOTO110
118 IFL=0THENPRINT"■■■■■<■":GOTO125
119 PRINT"■■■■";LEFT$(C$,L-1);"■↑■"
125 PRINT"■■■■■■■■■
"
130 PRINT"■■■■■■■■■■■■■■■■■■■■■■■ PRESS ANY KEY TO CONTINUE "
140 R=R-1:DI=R-L:IFDI<1THENPRINT"■■■SCROLL WIDTH LESS THAN 1 RE-RUN■":END
145 GET K$:IFK$=""THEN145
```

Lines 100-145 Inputs margin positions (see below).

```
150 RM=191-40+R
160 POKE53247,RM:POKE53246,DI:POKE53245,40-DI
```

Lines 150-160 Passes selected margin parameters to memory for use by machine code.

```
180 POKE53265,PEEK(53265)AND247
```

Line 180 Sets screen to 24 raw mode.

```
190 POKE53265,PEEK(53265)AND248
```

Line 190 Sets scrolling register to a minimum to provide a mask for new DATA to be PRINTed or POKEd under.

```
200 PRINT"■■";A$
```

Line 200 Clears screen and PRINTs scaling.

```
260 FORI=LTOR-1:POKEI+1024,32:NEXT
```

Line 260 PRINTs spaces to clear area where the new DATA is to be placed. (If this is not cleared then the old DATA will continue to scroll).

```
275 X=RND(1)*(R-L)+L+1024
```

Line 275 Calculates random position (between margins) for graphics character to be POKEd.

```
280 IFRND(1)<0.5THENPOKEX,42:POKEX+54272,1
```

Line 280 POKEs graphics character and colour to the position determined by x in the line 275, but only 50 per cent of the time as determined by RND(1) being less than 0.5.

```
290 SYS49152
```

Line 290 GOSUB machine code routine to scroll down.

```
300 GOTO260
```

Line 300 Creates a loop to continue the scrolling.

Load in the machine code routine and run this demonstration program. You'll be asked to enter the margins and then given a demonstration. When you're satisfied that the correct margins are set, stop the program using the RUN/STOP key.

To use these settings in your own programs, you need to do the following:-

1 After running, find the values of the variables used in line 160 (do this by entering PRINT RM, DI, DI-40 in direct mode). These values can then be used instead of the variables. The three POKEs need only be set once in your program unless you want to change the size of the scroll while the program is running.
2 Set the screen to 24-row mode as in line 180.
3 Set the scrolling register to the minimum as in line 190.
4 Clear the area where the new data is to be scrolled from.
5 Introduce the new data.
6 SYS 49152.

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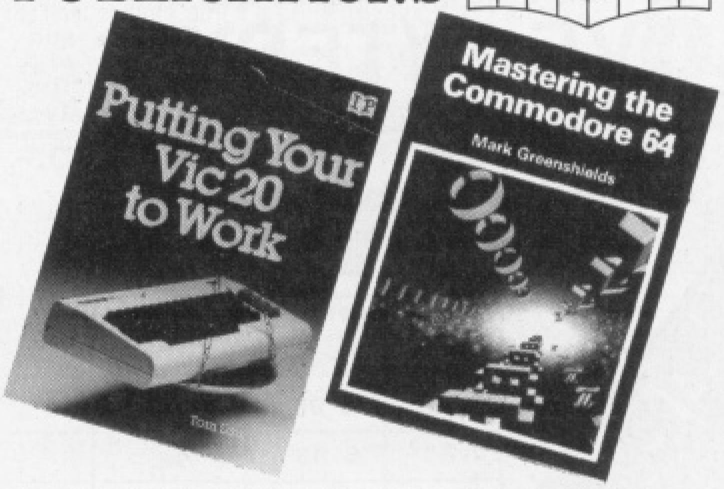
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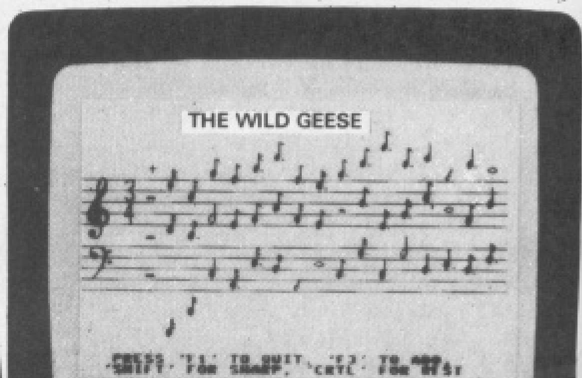
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The listing simply accepts a keypress to increment the colour registers, and as it uses so little memory, it should be included in any game.

```
10 PRINT"⌐■":POKE53281,4:POKE53280,8
```

Line 10 Sets screen and background colours, and clears screen.

```
20 GOSUB1000
```

Line 20 Gosubs to actual colour routine.

```
30 PRINT"⌐ END OF SUBROUTINE.":STOP
```

Line 30 Prints message (end of routine).

```
1006 CO=0
```

Line 1006 Sets counter to nil. (variable CO)

```
1010 PRINT"⌐ TO CHANGE COLOURS"
1020 PRINT" PRESS KEYS (1-4)"
1025 PRINT:PRINT:PRINT" THEN CONTINUE TO
 PRESS (RETURN)"
1026 PRINT" UNTIL YOU OBTAIN YOUR CHOSEN
 COLOUR."
1030 PRINT:PRINT" 1) SCREEN  COLOUR."
1040 PRINT:PRINT" 2) BORDER  COLOUR."
1050 PRINT:PRINT" 3) TEXT    COLOUR."
1060 PRINT:PRINT" 4) RETURN TO GAME."
```

Lines 1010-1060 Prints menu.

```
1065 CO=CO+1:IFCO>15THENCO=0
```

Line 1065 Increments counter by 1 and checks for out of range numbers.

```
1070 INPUTA:IFA<1ANDA>4THEN1010
```

Line 1070 Inputs variable A and checks for out of range numbers.

```
1080 ONAGOTO1100,1110,1120,1130
```

Line 1080 On value of A gotos the appropriate line to change colours.

```
1090 GOTO1010
```

Line 1090 Goes back to menu.

```
1100 POKE53281,CO:GOTO1010
```

Line 1100 Pokes colour into screen register, then returns to menu.

```
1110 POKE53280,CO:GOTO1010
```

Line 1110 Pokes colour into border register, then returns to menu.

```
1120 POKE646,CO:GOTO1010
```

Line 1120 Pokes colour into text register, then returns to menu.

```
1130 RETURN
```

Line 1130 Returns from subroutine.

●The Text Formatting Routine

The Text Formatting Routine is really a small utility which can be incorporated into the adventure game and used as a subroutine. For example the location descriptions can be held in either strings or data statements, and there is no need to worry about formatting. The routine will take care of all screen display. Simply set the string to be displayed as (Z) string upon entry into the subroutine, i.e. at the start of the format routine. Z string = (whatever string you wish to display).

In the example, Z string is a predefined string which is not formatted, then it is displayed after using the subroutine. The actual subroutine and display code is contained in lines 200-350. A loop is set up which starts to look for a space in the string, at the 38th character; if not found, the pointer comes backwards along the string, until a space is found. It then sets that portion of the string to SE string (CO) and goes back to search the next 38 characters. When the whole string has been dealt with, the lines 240-270 will print out strings held in SE string, using a small loop, then the final part of Z string is printed ending with a full stop.

```
10 PRINT"⌐■":REM CLEAR & PRINT BLACK
20 POKE53281,5:POKE53280,4
```

Lines 10-20 Clears screen, prints black text, pokes screen & border colours.

```
60 PRINT" PRESS (*) TO SEE AN EXAMPLE TE
XT"
```

Line 60 Prints Instruction.

```
70 GETA$:IFA$<>"*"THEN70
```

Line 70 Waits for a key to be pressed.

```
74 PRINT"⌐"
```

Line 74 Clear to screen.

```
75 PRINT" BEFORE FORMATTING."
76 PRINT" ___________________"
```

Line 75 Prints message.

```
80 Z$="THIS IS A SENTENCE WHICH HAS NOT
BEEN FORMATTED USING THE AUTOMATIC"
90 Z$=Z$+" TEXT FORMATTING SUBROUTINE, A
ND THE RESULT IS A VERY UNTIDY SCREEN"
100 Z$=Z$+" DISPLAY. BUT IT CAN BE PRESE
NTED TIDILY WITHOUT ALTERING THE WORDS"
110 PRINTZ$
```

Line 80-110 Places text into Z string, (Prints unformatted version of Z string).

```
120 PRINT:PRINT" NOW PRESS THE + KEY"
```

Line 120 Prints Instruction.

```
130 GETA$:IFA$<>"+"THEN130
```

Line 130 Waits for key to be pressed.

```
170 PRINT
180 PRINT" SAME SENTENCE AFTER ROUTINE"
190 PRINT" ____________________________"
```

Line 170-190 Prints message.

```
200 L=LEN(Z$):LZ=0:CO=1
```

Line 200 Sets variables: L=length of Z string: CO=line counter: LZ=the pointer which counts the number of characters already dealt with, so that the next bit to be formatted will start at LZ+1.

```
210 FORX=38TOLSTEP38
```

Line 210 Sets up loop to start at 38th character, in steps of 38.

```
220 GOSUB300
```

Line 220 Gosubs to routine that prepares the strings.

```
230 NEXT
```

Line 230 End of loop.

```
240 FORT=1TOCO-1
```

Line 240 Starts loop to print out the formatted text.

```
250 PRINTTAB(1)SE$(T)
```

Line 250 Prints the lines of formatted text now contained in SE string.

```
260 NEXT
```

Line 260 Ends the loop.

```
270 PRINTTAB(1)RIGHT$(Z$,L-LZ);"."
```

Line 270 Prints the last part of Z string which does not need formatting +".".

```
280 GET A$:IFA$=""THEN280
```

Line 280 Waits for a key to be pressed.

```
290 STOP
```

Line 290 Stop. End of demonstration.

```
300 M$=MID$(Z$,X,1)
```

Line 300 Sets M string as a pointer to search for space in line of text. Subroutine that prepares strings in correct lengths(SE$)

```
310 Y$=MID$(Z$,(LZ+1),X-LZ)
```

Line 310 Sets Y string to be the line of text being searched.

```
320 IFM$=" "THENSE$(CO)=Y$:GOTO340
```

Line 320 If the pointer finds a space at 38th character then set SE string (CO) as the line of text which will be printed: goto line 340.

```
330 X=X-1:GOTO300
```

Line 330 Assumes space not found at 38th character: decrease loop step by 1, I.E. go back to text line and search backwards from 38th character until a space is found.

```
340 LZ=X:CO=CO+1
```

Line 340 Sets counter LZ to = X. This is current position in the string being formatted, so that next formatting will take place from LX+1: I.E. from the next unformatted character.
Increase CO by 1: Rem line counter.

```
350 RETURN
```

Line 350 Returns from subroutine.

• The Thief Routine

The Thief Routine shows how a thief can be introduced into the adventure game as a subroutine, which can be called either randomly, or by using a variable which increases every time the player moves, i.e. PL=PL+1: If PL=25 then GOSUB Thief routine.

The demonstration shows the player holding 10 objects and the thief holding none. By pressing the (*) key a thief will appear and steal a random object, in the actual game a check would be carried out, to make sure that the object was being carried. The description of the thief is also randomly generated, to add the impression of a bunch of thieves, rather than one.

The actual routine is contained in lines 300-400. The description is chosen by line 330, and printed out in the remaining lines. In the actual game, the code would differ slightly, the thief would appear, then a check would be made to see which objects were carried. The thief would take an object and run off with it, for instance the flag would be altered from carried (say –1) to hidden (say location 99).

```
20 DIM OB$(10),OB(10)
```

Line 20 Dimensions arrays for 10 objects & 10 object numbers.

```
30 FORX=1TO10:READOB$(X),OB(X):NEXT
```

Line 30 Reads in the array data.

```
40 DATAROPE,1,BOTTLE,1,TORCH,1,SWORD,1
50 DATAAXE,1,DAGGER,1,CLOAK,1,MATCH,1
60 DATADIAMOND,1,RUBY,1
```

Line 40-60 The data.

```
70 DIMTH$(15):FORX=1TO15:READTH$(X):NEXT
```

Line 70 Dimensions the array for description of Thief: read in data.

```
80 DATACRAFTY,SLY,QUICK,NASTY,SMALL
90 DATABLACK,GREEN,BROWN,RED,YELLOW
95 DATAIMP,DWARF,BAT,GNOME,RAT
```

Line 80-95 The data.

```
110 PRINT"▯■":POKE53281,5:POKE53280,6
```

Line 110 Clears the screen, print colour black, poke screen & border colours.

```
120 PRINT"PRESS (*) KEY TO TEST SUBROUTI
NE"
122 PRINT:PRINT:PRINT"YOUR OBJECTS"
124 PRINT"____________"
```

Line 120-124 Prints instructions.

```
130 PRINT:FORX=1TO10
```

Line 130 Starts loop.

```
140 IFOB(X)=1THENPRINTOB$(X),
```

Line 140 If object number =1 then print out the objects carried by player.

```
150 NEXT
```

Line 150 Ends loop.

```
160 PRINT:PRINT"■■■THIEF OBJECTS"
165 PRINT"____________"
```

Line 160-165 Prints message.

```
170 FORX=1TO10
```

Line 170 Starts loop.

```
180 IFOB(X)=0THENPRINTOB$(X),
```

Line 180 If object number =0 then print out objects held by thief.

```
190 NEXT
```

Line 190 Ends loop.

```
210 GETA$:IFA$<>"*"THEN210
```

Line 210 Waits for keypress.

```
220 GOSUB300:GOTO120
```

Line 220 Gosubs to stealing subroutine: Go back to Instructions.

```
300 A=INT(5*RND(1)+1):B=INT(5*RND(1)+1)
```

Line 300 Sets variables A.B.C. to a random number each, between 1-5.

```
310 C=INT(5*RND(1)+1):S$=" "
```

Line 310 Sets S string to equal a space.

```
320 D=INT(10*RND(1)+1)
```

Line 320 Sets variable D to a random number between 1-10.

```
330 T$=TH$(A)+S$+TH$(B+5)+S$+TH$(C+10)
```

Line 330 Sets T string to the Thief description by using variables A.B.C. as pointers to choose words randomnly from the TH string array. Rem. A chooses from first 5 data words, B from second 5, C from last 5.

```
340 TH=0:PRINT"▯SUDDENLY A ";T$
```

Line 340 Sets TH =0. Counts the objects stolen.

```
350 PRINT"DARTS FROM THE SHADOWS INTENT"
360 PRINT"ON STEALING FROM YOU."
370 PRINT"AND ESCAPES WITH ";
```

Line 350-370 Clears screen, print message.

```
390 IFOB(D)=1THENPRINT"A "OB$(D):TH=TH+1
:OB(D)=0
```

Line 390 Uses variable D to choose a random object to be stolen. Check that the object is held by the player: I.E. if the object no. =1. if the player has the object then steal it and set the object number =0. I.E. the thief now has it. Now increase the object counter by 1.

```
400 IFTH=0THENPRINT"NOTHING."
```

Line 400 If the object counter is 0 then print message (nothing taken).

```
410 PRINT:PRINT:RETURN
```

Line 410 Returns from subroutine.

●The Object display and inventory.

The Object display and Inventory is a double routine showing how objects can be displayed in the locations chosen, and accounted for in the player's inventory, when they have been taken from the location.

The example shows a location containing 10 objects, these have been numbered so that the user can note the action taking place. The user is invited to choose an object number, and this object will then be taken from the object display and will appear in the player's inventory, or vice versa if the object is being carried.

Subroutines for Object & Inventory display

```
10 POKE53281,6:POKE53280,6 :PRINT"♥"
```

Line 10 Pokes screen & border colours: Clear screen.

```
50 DIMOB$(10),OB(10)
```

Line 50 Dimensions arrays for 10 obects and 10 object numbers.

```
60 FORX=1TO10:READOB$(X),OB(X):NEXT
```

Line 60 Reads data into arrays.

```
70 DATA3AXE,1,2GOLD,1,1HORN,1,1FLUTE,1
75 DATA1CAPE,1,2OIL,1,2ICE,1,3APPLE,1
80 DATA1TORCH,1,4NOTE,1
```

Lines 70-80 Data.

```
90 DIMZ$(4):FORX=1TO4:READZ$(X):NEXT
```

Line 90 Dimensions array to hold collective description of objects (Z string).

```
95 DATAA,SOME,AN,THE
```

Line 95 Data.

Display objects in location

```
230 CO=0:PRINT"♥■IN THIS ROOM YOU SEE"
232 PRINT"--------------------------------"
```

Lines 230-232 Prints message. Set object counter (CO) to nil.

```
240 FORX=1TO10
```

Line 240 Starts loop.

```
250 Z=VAL(LEFT$(OB$(X),1))
```

Line 250 Sets variables Z to equal 1st character of any object in OB string.

```
260 IFOB(X)=1THENCO=CO+1:PRINTX" "Z$(Z)"
 "MID$(OB$(X),2),
```

Line 260 If the object number (OB) =1 then print the collective description of the object denoted by the variable Z, then print the remainder of the object description ignoring the first character.

```
270 NEXT
```

Line 270 End of loop.

```
280 IFCO=0THENPRINT"NOTHING"
```

Line 280 If object counter is = nil then print "nothing".

Display objects in Inventory

```
330 A=0:PRINT:PRINT:PRINT"YOU ARE CARRYI
NG "
335 PRINT"--------------------------------"
```

Line 330 Sets variable A to nil: Rem A is object counter for Inventory held. Prints message.

```
340 FORX=1TO10
```

Line 340 Starts loop.

```
350 X1=AAND1
```

Line 350 Sets variable X1 to = A and 1: Rem bit flipping, this controls the number of items of Inventory which will be printed on any one line. If the bit is set at 0 then the next item will be printed on same line.

```
360 Z=VAL(LEFT$(OB$(X),1))
```

Line 360 Same as 250.

```
365 IFOB(X)=0ANDX1=1THENPRINT
```

Line 365 Checks to see if object held (yes if object number is 0) then checks to see if bit is set to 1 (yes of X1 =1): of both positive then move print position to next line.

```
370 IFOB(X)=0THENA=A+1:PRINTZ$(Z)" "MID$
(OB$(X),2)",";
```

Line 370 If the object number (OB) =0 then proceed same as line 260.

```
380 NEXT
```

Line 380 **End of loop.**

```
390 IFA=0THENPRINT"NOTHING ";
```

Line 390 If A=0: Rem object counter of objects held: then print "nothing".

```
400 PRINT"▌." :REM CURSOR LEFT
```

Line 400 Prints cursor left an full stop.

```
505 PRINT:PRINT
510 PRINT"WHICH OBJECT NUMBER (1-10)"
515 PRINT"DO YOU WANT TO SWOP AROUND."
520 PRINT"--------------------------------"
```

Line 500-520 Prints message.

```
550 INPUTP:IFP<1ORP>10THEN510
```

Line 550 Get object number and check within range.

```
560 IFOB(P)=1THENOB(P)=0:GOTO580
```

Line 560 If OB(P)=1 then OB(P)=0. I.E. if object chosen has a value of 1 then change it to a value of 0; it will then move from object display to Inventory display, or vice versa. Now jump the next line.

```
570 OB(P)=1
```

Line 570 Assumes that object chosen has a value of 0 then change it to 1.

```
580 GOTO230:REM REPEAT ROUTINE
```

Line 580 Gotos 230. Rem repeat the routine.

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KEYBOARD KAPERS

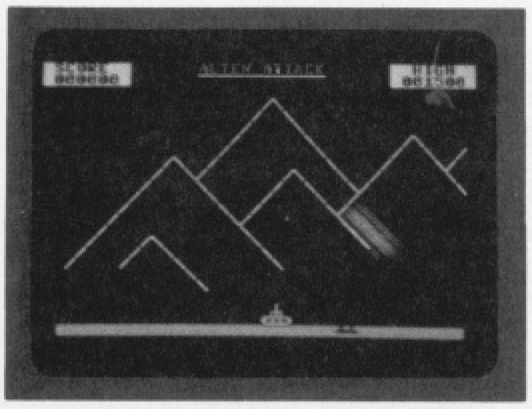
Two short games to type in yourself — cosmic fun with Brian Rushby's Alien Attack, *or perhaps you'd prefer a more down-to-earth pastime playing shove ha'penny with* Slider *by R. Blunt?*

ALIEN ATTACK

Alien Attack looks deceptively simple: don't be fooled! You may have only one sprite (sorry, alien) to zap, but it's a persistent beast. Each time you hit it, the alien reduces in strength but increases in speed (never mind the logic, just play the game). If you get hit, you have to start again from the beginning.

To save the game, type in the first listing and save it to disk or tape before running it. When you run it, the machine code data will be generated which you are then able to save to tape or disk following the prompts given. The second listing should be saved after the first.

To run the game, run the first listing followed by the second.



```
10 LD=LD+1
11 IF LD=1THENLOAD"ALIEN M/C",8,1:REM IF
 USING CASS CHANGE 8 FOR 1
12 POKE43,1:POKE44,8
```

Lines 10-12 Loads machine code program from tape or disk using device number 1 for tape or 8 for disk.

```
15 GOSUB1000:POKE53278,0:POKE52258,0:POK
E52257,255
20 GOSUB4000
22 IFPEEK(52231)=0THENGOSUB4030
25 IFPEEK(52231)=0THENGOTO5000
30 IFPEEK(52232)=1THENGOSUB4360
```

Lines 15-30 Initialises subroutine calls.

```
100 SYS 49152
110 IFPEEK(52246)=219THENYU=INT(132*RND(
1))+68:POKE52256,YU:SYS49307:GOTO110
120 IF PEEK(52243)=1THENGOTO30
130 GOTO25
```

Lines 100-130 Calls between m/c and basic.

```
1000 REM ** TITLE PAGE ****************
1002 POKE53280,12:POKE53281,12
1005 PRINT"****************************
*************";
1010 PRINT"
"
1015 PRINT"
"
1020 PRINT"
"
1025 PRINT"
"
1030 PRINT"
"
1035 PRINT"
"
1040 PRINT"
"
1045 PRINT"
"
1060 PRINT"                    WRITTEN BY "
1065 PRINT"         BRIAN AND GARY RUSHB
Y"
1070 PRINT"                    PLEASE WAIT
"
1075 PRINT"****************************
***************"
```

Lines 1000-1075 Calls subroutine to enter sprite data into the memory.

```
1077 GOSUB6800
```

Line 1077 Calls the subroutine to enter the sprite data into the memory.

```
1080 V=53248:Y=204:X=48:C=0:POKE2045,242
:POKEV+44,6:POKE2042,243:POKEV+41,2
1085 POKEV+4;X:POKEV+10,X:POKEV+5,Y:POKE
V+11,Y
1086 POKEV+21,36:POKEV+16,36
1090 A1$="
"
1092 A2$="                         "
1094 A3$="     DO YOU REQUIRE INSTRUCTIO
NS (Y/N) "
1096 PRINT"";A2$+LEFT$(A1$,10)"
    "
```

Lines 1080-1096 Initialises the title page sprites.

```
1100 FORI=36TO0STEP-1
1102 FORJ=0TO8:NEXTJ
1105 X=X-8:IFX=0THENX=255:POKEV+16,0:SC=
1
1110 POKEV+4,X:POKEV+10,X
1115 C=C+1:IFC>15THENC=0
1117 POKEV+41,C:POKEV+44,C+1
1120 PRINT"";A2$+LEFT$(A1$,I)+LEFT$(A3$
,(40-I))
1200 NEXTI
1250 POKEV+21,0
```

Lines 1100-1250 Moves the title page sprites and the instructions flag.

```
1300 GETI$:IFI$=""THEN1300
1320 IFI$<>"Y"ANDI$<>"N"THEN1300
1330 IFI$="Y"THENGOSUB2000
1500 RETURN
```

Lines 1300-1500 Provision of instructions option.

```
2000 REM ** INSTRUCTIONS **************
2002 PRINTCHR$(14):REM SWITCH TO LOWER C
ASE
2005 PRINT"***********************
***"
2010 PRINT"**                          *
*"
2015 PRINT"***********************
*"
2030 PRINTTAB(5)"DEFEND YOUR HOME PLAN
ET FROM"
2035 PRINTTAB(2)"INVASION BY ALIENS WHO
ARE ATTACKING"
2040 PRINTTAB(2)"YOUR ARMY AMONGST THE M
OUNTAINOUS"
2045 PRINTTAB(2)"LANDSCAPE OF YOUR LOCAL
 CITY."
2050 PRINTTAB(5)"THE ALIEN SHIPS ARE CO
```

```
NSTRUCTED"
2055 PRINTTAB(2)"FROM A VERY HARD METALL
IC ALLOY WHICH"
2060 PRINTTAB(2)"MAKES THEM DIFFICULT TO
 DESTROY AND"
2065 PRINTTAB(2)"ALSO MAKES THEM DEADLY
SHOULD ONE"
2070 PRINTTAB(2)"BOUNCE ONTO YOUR TANKS.
"
2075 PRINTTAB(5)"▓IOU ARE I▔/▔▁♠L IN CHA
RGE OF A TANK"
2080 PRINTTAB(2)"▔COMMAND. /SE YOUR TANKS
 TO DESTROY"
2085 PRINTTAB(2)"AS MANY ALIEN SPACESHIP
S AS YOU CAN.
2090 PRINTTAB(5)"▓▔OINTS ARE AWARDED FOR
 EACH HIT ON"
2095 PRINTTAB(2)"THE SPACESHIPS.IO DESTR
OY THEM THEY"
2100 PRINTTAB(2)"MUST BE HIT TEN TIMES."
2110 PRINT"▓▓▓▓▓▓▓▓▓▓▓! ▔L▔♥♥ ♠/I ╱▔I I▔ ▔▔
/I╲/╱▔ "
2120 GETA$:IFA$=""THEN2120
2202 PRINT"▓▓▓▓▓▓▓▓▓▓▓************************
***"
2210 PRINT"▓▓▓▓▓▓▓▓▓▓**    ♠L╲▔/ ♠I I♠~╱    *
*"
2215 PRINT"▓▓▓▓▓▓▓▓▓▓**************************
*"
2220 PRINTTAB(5)"▓▓▓▓IONUS POINTS ARE AW
ARDED FOR"
2225 PRINTTAB(7)"EACH SPACESHIP DESTROYE
D."
2230 PRINTTAB(5)"▓▓▔XTRA TANKS ARE AWARD
ED FOR EACH"
2235 PRINTTAB(14)"10000 POINTS."
2237 PRINTTAB(5)"▓▓▔LACE YOUR JOYSTICK I
N PORT 2."
2240 PRINTTAB(13)"▓▓▓▓▓**I▔▔ L╱~╱**"
2400 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓! ▔L▔♥♥ ♠/I ╱▔I I▔
♥I♠_I "
```

Lines 2000-2400 Displays instructions.

```
2405 FL=0
2410 GETA$
2411 FL=FL+1
2412 IFFL/2<>INT(FL/2)THENPRINTLEFT$(A2$
,19)TAB(13)"                "
2414 IFFL/2=INT(FL/2)THEN PRINTLEFT$(A2$
,19)TAB(13)"▓▓**I▔▔ L╱~╱**"
2430 FORJ=0TO20:NEXT
2445 IFA$=""THEN2410
2450 FORI=0TO1000:NEXT
2490 PRINT"▔"CHR$(142):REM SWITCH TO UPP
ER CASE
2500 RETURN
```

Lines 2405-2500 Displays a flashing message.

```
4000 REM ** DECLARATION OF VARIABLES **
4010 HI=0:DIMSC$(5),SC(5):FORJ=1TO5:SC$(
J)="**********":SC(J)=0:NEXTJ
4020 FORI=52238TO52241:POKEI,0:NEXTI
4030 PRINT"▔":POKE53281,11:POKE53280,11
4040 POKE52232,0:POKE52231,4
4050 FORI=52234TO52237:POKEI,0:NEXTI
4060 POKE52242,1
```

Lines 4000-4600 Gives declaration of variables.

```
4070 PRINT"▓▓ SCORE    ■      ▔ ALIEN ATTA
CK      ▓▓ HIGH  ";
4080 PRINT"▓            ■        ▌▔▔▔▔▔▔▔▔▔▔▔▔▔
      ▓▓         "
4090 PRINT"▓▓▓ 000000▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
▓▓▓▓▓▓▓▓000000 "
4120 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓L╱╲"
4125 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓L╱▓▓╲"
4130 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓L╱▓▓▓▓╲"
4135 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓L╱▓▓▓▓▓▓╲▓▓▓▓
▓▓▓▓L╱╲"
4140 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓L╱▓▓▓▓▓▓▓▓╲▓▓▓
▓▓▓L╱▓▓╲▓▓L╱"
4145 PRINT"▓▓▓▓▓▓▓▓▓▓▓L╱╲▓▓L╱▓▓▓▓▓▓▓▓▓▓╲▓▓
▓▓L╱▓▓▓▓╲╱"
4150 PRINT"▓▓▓▓▓▓▓▓▓L╱▓▓╲╱▓▓▓▓▓▓▓L╱╲▓▓▓▓╲▓
▓L╱▓▓▓▓▓╲"
4155 PRINT"▓▓▓▓▓▓▓▓L╱▓▓▓▓╲▓▓▓▓▓▓L╱▓▓╲▓▓▓▓╲
╱▓▓▓▓▓▓▓╲"
4160 PRINT"▓▓▓▓▓▓▓L╱▓▓▓▓▓▓╲▓▓▓▓L╱▓▓▓▓╲▓▓L╱
"
4165 PRINT"▓▓▓▓▓▓L╱▓▓▓▓▓▓▓▓╲▓▓L╱▓▓▓▓▓▓╲╱"
4170 PRINT"▓▓▓▓▓L╱▓▓▓▓▓▓▓▓▓▓╲╱▓▓▓▓▓▓▓▓╲"
4175 PRINT"▓▓▓▓L╱▓▓▓▓▓▓▓▓▓▓▓▓╲▓▓▓▓▓▓▓▓▓╲
"
4180 PRINT"▓▓▓L╱▓▓▓▓L╱╲▓▓▓▓▓▓▓▓╲▓▓▓▓▓▓▓▓▓
╲"
4185 PRINT"▓▓L╱▓▓▓L╱▓▓╲▓▓▓▓▓▓▓╲"
4190 PRINT"▓L╱▓▓▓L╱▓▓▓▓╲▓▓▓▓▓▓▓╲"
4195 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓╲"
4200 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓╲"
4310 PRINT"▓▓▓▓▓
         "
4320 PRINT"
        ▓"
```

Lines 4070-4320 Prints onto the screen.

```
4330 POKE1971,241:POKE1972,241:POKE1973,
241
4340 POKE1097,PEEK(52238)+176:POKE1098,P
EEK(52239)+176
4350 POKE1099,PEEK(52240)+176:POKE1100,P
EEK(52241)+176
4360 POKE52249,0:POKE52245,0:POKE52247,1
:POKE52248,1:POKE52228,0:POKE52257,255
4370 POKE52225,183:POKE52230,213:POKE522
27,0:POKE52243,0:POKE52233,0
4372 POKE52224,183:POKE52226,0:POKE52229
,15
```

Lines 4330-4372 Pass variable parameters to machine code.

```
4735 REM ** GEN INITIALISATION ********
4740 POKE2045,242:POKEV+44,7:POKE2040,24
5:POKEV+39,15
4745 POKE2041,246:POKEV+40,10:POKE2042,2
43:POKEV+41,10
4750 POKE53248,(PEEK(52225)):POKE53249,2
13
4760 Y=INT(RND(1)*164)+52:POKE52246,Y
4765 YU=INT(164*RND(1))+52:POKE52256,YU
4770 NU=PEEK(V+30):POKE52258,0:REM CLEAR
 COLLISION DETECTION REGISTER
4775 POKEV+2,213:POKEV+3,183
4780 POKEV+21,37
4790 RETURN
5000 REM ** END OF GAME **************
```

Lines 4735-4790 General initialisation.

```
5005 POKE53281,15:POKE53280,10
5010 POKEV+21,0
```

Lines 5005-5010 Change screen colour and switch sprites off.

```
5011 SC=(PEEK(52234)*100000)+(PEEK(52235
)*10000)
5012 SC=SC+(PEEK(52236)*1000)+(PEEK(5223
```

```
7)*100)
5013 HI=(PEEK(52238)*100000)+(PEEK(52239
)*10000)
5015 HI=HI+(PEEK(52240)*1000)+(PEEK(5224
1)*100)
```

Lines 5011-5015 Pass scores and hi-score parameters from m/c to basic for high score table.

```
5020 PRINT"YOUR SCORE=";SC
5025 IFSC=HITHENPRINT"
 NEW HIGH SCORE"
5030 PRINT"HIGH SCORE=";HI
5050 FORJ=0TO20:GETA$:NEXTJ:Z=0:FORJ=1TO
5:IFSC>SC(J)THENZ=J:J=6
5055 NEXTJ:IFZ=0THENGOTO5090
5060 PRINT"     ENTER YOUR NAME:";I
NPUTA$
5065 IF LEN(A$)>10 THENA$=LEFT$(A$,10)
5070 IFZ=5THEN5080
5075 FORJ=4TOZ STEP-1:SC(J+1)=SC(J):SC$(
J+1)=SC$(J):NEXTJ
5080 SC(Z)=SC:SC$(Z)=A$
```

Lines 5020-5080 Prints the score and high score, works out if present score warrants inclusion in high score table — if sc enter name.

```
5090 PRINT"HIGH SCORE TABL
E"
5100 PRINT"
5110 PRINT""TAB(10);"SCORE";TAB(26);"NA
ME"
5115 PRINTTAB(10);"-----";TAB(26);"----"
5120 FORJ=1TO5:PRINT"";J;TAB(9):SC(J);
TAB(26);SC$(J)
5130 NEXTJ:W=FRE(0):REM AVOID GARBAGE CO
LLECTION
```

Lines 5090-5130 Prints the high score table.

```
5200 PRINT" DO YOU WANT A
NOTHER GO (Y/N) "
5210 GETA$:IFA$=""THEN5210
5220 IFA$="Y"THENGOTO22
5230 IFA$="N"THENEND
5240 IFA$<>"Y"ANDA$<>"N"THEN5210
```

Lines 5200-5240 Gives option for another game.

```
6700 REM ** ENTER SPRITE DATA INTO MEM*
6800 FORS=15488TO15550:READQ:POKES,Q:NEX
T
6805 FORS=15552TO15614:READQ:POKES,Q:NEX
T
6815 FORS=15680TO15742:READQ:POKES,Q:NEX
T
6820 FORS=15744TO15806:READQ:POKES,Q:NEX
T
6825 FORS=15808TO15870:READQ:POKES,Q:NEX
T
6900 RETURN
```

Lines 6700-6900 Subroutine to enter sprite data into memory.

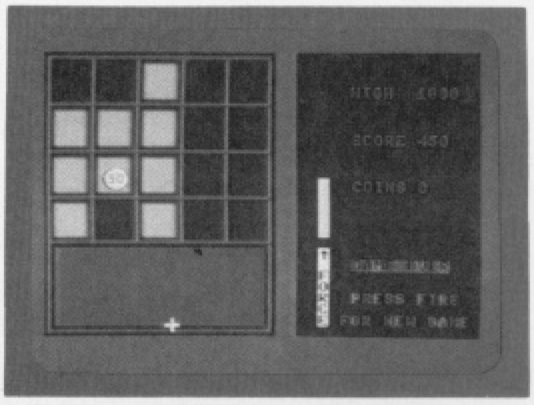
```
7000 REM ** DATA FOR ALIEN SHIP *******
7005 DATA,,3,231,192,6,195,96,13,129,17
6,27,,216,53,,172,108,129,54,218
7010 DATA126,91,177,255,141,97,153,134,1
,255,128,97,102,134,178,195,77,220,255
7015 DATA187,109,60,182,54,,108,27,,216,
13,129,176,7,195,224,,,,,,
7020 DATA,,3,231,192,6,195,96,13,129,17
6,27,,216,54,,108,108,,54,216,
7025 DATA27,176,,13,96,,6,,,,96,,6,176,,
13,216,,27,108,,54,54,,108
7030 DATA27,,216,13,129,176,7,195,224,,,
,,,
7100 REM ** DATA FOR TANK **************
7105 DATA,,,,,,,,,,,,,,,,,,,,24,,,24,,,24
,,,24,,,24
7110 DATA,,255,,1,90,128,1,189,128,1,219
,128,63,255,252,118,219,110,249,231
7115 DATA159,249,231,159,118,219,110,63,
255,252
7120 REM ** DATA FOR MISSILE **********
7125 DATA,,,24,,,24,,,24,,,24,,,24,,,,
,,,,,,,,,,,,
7130 DATA,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
7140 REM ** DATA FOR EXPLOSION ********
7145 DATA,,,1,70,,2,1,,20,,,,16,192,4,20
0,32,2,36,,,12,28,,132,64
7150 DATA4,4,144,16,35,136,16,20,68,,64,
32,10,4,4,2,,,33,225,,,,160,,32
7155 DATA,4,16,,,,,,
```

Lines 7000-7155 Sprite data (all zeroes are omitted).

SLIDER

Slder, by R Blunt, is a computerised version of the old 'shove a penny' game: you have to push a penny onto a pattern of squares. If it lands on a line, you lose the penny, otherwise you gain the square. The game ends when you've either captured every square or lost all your money. Instructions are given in the game.

Slider requires a joystick which should be plugged into port 2.



```
105 POKE53280,12:POKE53281,11:PRINT"
"
110 PRINTTAB(7)"
"
111 PRINTTAB(7)"
"
112 PRINTTAB(7)"
"
113 PRINTTAB(7)"
"
114 PRINTTAB(7)"
"
120 PRINTTAB(12)"BY R.BLUNT 1984"
```

Lines 100-120 Displays the title screen.

```
155 AD=54277:SR=54278:HI=54273:LO=54272:
W=54276:VO=54296
158 FORN=LOTOVO:POKEN,0:NEXT
160 V=53248:C=54272:HS=1000:JS=56320
165 POKEV+21,5:POKEV+39,1:POKEV+41,7
170 POKE2040,192
175 FORN=0TO62:READA:POKE12288+N,A:NEXT
180 FORN=0TO62:READA:POKE12352+N,A:NEXT
182 FORN=0TO62:READA:POKE12416+N,A:NEXT
184 FORN=0TO62:READA:POKE12480+N,A:NEXT
186 FORN=0TO62:READA:POKE12544+N,A:NEXT
188 FORN=0TO62:READA:POKE12608+N,A:NEXT
```

Lines 155-188 Sets up sound, sprites and hi-score.

```
260 POKE53280,11:PRINTCHR$(14)
262 PRINT"♥"TAB(10)"♥L\‾‾_ \/♥I_/‾I\Γ/♥"
264 PRINT"♥♥♥LIDER IS BASED ON THE FAIR
GROUND GAME  OF 'SHOVE HALFPENNY'."
270 PRINT"♥♥HE OBJECT OF THE GAME IS TO
 SLIDE THE"
272 PRINT"♥COIN ONTO A SQUARE & FINISH C
LEAR OF"
274 PRINT"♥ANY LINES. ♥UCCESS IS REWARDE
D BY"
276 PRINT"♥ADDING THE COINS VALUE TO THE
 SCORE"
278 PRINT"♥BUT FAILURE RESULTS IN LOSING
 THE COIN."
280 PRINT"♥‾IRECTION IS CONTROLLED BY AL
IGNING"
282 PRINT"♥THE CROSSWIRE WITH THE CENTRE
 OF THE"
284 PRINT"♥COIN; FORCE BY THE SCALE INDI
CATOR."
288 PRINT"♥♥‾N WINNING A SQUARE IT IS BL
ANKED OUT"
290 PRINT"♥AND IS NO LONGER AVAILABLE. ‾
OMPLETED"
292 PRINT"♥TABLES RESULT IN ADVANCING TO
 THE NEXT"
294 PRINT"♥LEVEL.":PRINT"♥ IOU START WIT
H 10 COINS AND AN EXTRA"
295 PRINT"♥COIN IS GIVEN FOR EVERY 1000
POINTS."
296 PRINT"♥‾LUG JOYSTICK IN PORT 2. IOOD
 LUCK!!"
297 PRINT"♥♥♥♥♥♥♥♥♥♥♥♥Γ‾L‾♥♥ _\_‾ IΓ ♥I♠_
I";
299 IF(PEEK(JS)AND16)<>0THEN299
```

Lines 250-299 Displays instructions.

```
305 TX=96:TY=228:CX=96:CY=210:P=0:J=0:SC
=0:SP=1649:CN=10:SQ=0:CV=50:CP=193:BO=1
310 P(1)=111:P(2)=98:P(3)=247:P(4)=160
315 POKE53280,12:POKE2042,CP:PRINTCHR$(1
42)"♥";
320 A$="♥┌────┬────┬────┬────┬────┐♥♥ ■"
325 B$="♥│    │    │    │    │    │♥♥ ■"
330 C$="♥├────┼────┼────┼────┼────┤♥♥ ■"
335 D$="♥├────┴────┴────┴────┴────┤♥♥ ■"
336 E$="♥│♥                      ■│♥♥ ■"
337 F$="♥└────────────────────────┘♥♥ ■"
340 PRINTA$
345 FORN=1TO3:PRINTB$:PRINTB$:PRINTB$:PR
INTC$:NEXT
350 PRINTB$:PRINTB$:PRINTB$:PRINTD$
355 FORN=1TO7:PRINTE$:NEXT:PRINTF$;
360 PRINT"♥♥"TAB(25)"♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥
♥♥♥♥E♥C♥R♥O♥F♥ ♥I♠"
400 GOSUB1110:REM DISPLAY SCORE
```

Lines 300-400 Sets up the variables and displays them.

```
505 POKEAD,15:POKESR,128:POKEHI,10:POKEL
O,60:POKEW,129
510 POKEV,TX:POKEV+1,TY:POKEV+4,CX:POKEV
+5,CY
```

Lines 500-510 Initiates sound, displays sight and coin.

```
555 IFP=50THENP=0:J=0:FORN=SPTO1649STEP4
0:POKEN,32:NEXT:SP=1649
556 IFJ=4THENJ=0:SP=SP-40
558 J=J+1:P=P+1
560 POKESP,P(J):POKESP+C,7
```

Lines 550-560 Displays the power.

```
610 JV=PEEK(JS)
615 IF(JVAND16)=0THEN802
620 IF(JVAND1)=0THENTY=TY-1:IFTY<212THEN
TY=212
625 IF(JVAND2)=0THENTY=TY+1:IFTY>235THEN
TY=235
630 IF(JVAND4)=0THENTX=TX-1:IFTX<66THENT
X=66
635 IF(JVAND8)=0THENTX=TX+1:IFTX>126THEN
TX=126
700 GOTO505
```

Lines 600-700 Checks joystick direction.

```
802 X=CX-TX:Y=CY-TY
805 XI=X/SQR(X↑2+Y↑2):YI=Y/SQR(X↑2+Y↑2)
810 FORN=0TOP:CX=CX+XI*8*(P-N)/P:CY=CY+Y
I*8*(P-N)/P
811 IFCX<0THENCX=0
812 IFCX>255THENCX=255
813 IFCY<0THENCY=0
815 POKEV+4,CX:POKEV+5,CY
820 POKEV+31,0:POKEVO,15*(P-N)/P:NEXT
822 POKEW,0
825 FORN=1TO200:NEXT:REM THIS LOOP TO AL
LOW RESET OF COLLISION REGISTER
826 Z=PEEK(V+31)AND4
830 IFZ=4ORCY<42ORCY>170ORCX<16ORCX>176T
HENCN=CN-1:GOTO840
832 GOSUB1005:REM BLANK SQUARE
835 SC=SC+CV:IFSC=>1000*BOTHENCN=CN+1:BO
=BO+1
836 IFSC>HSTHENHS=SC
840 GOSUB1110:REM UPDATE SCORE
841 IFSQ=20THEN955:REM NEXT LEVEL
846 IFCN=0THEN905:REM GAME OVER
850 FORN=1TO1000:NEXT:CX=96:CY=210:P=50:
GOTO505
```

Lines 800-850 Moves the coin.

```
905 PRINT"♥♥♥♥♥♥♥♥"TAB(28)"♥GAME OVER■"
910 PRINT"♥♥"TAB(28)"PRESS FIRE":PRINTTA
B(27)"♥FOR NEW GAME"
930 GOTO299
```

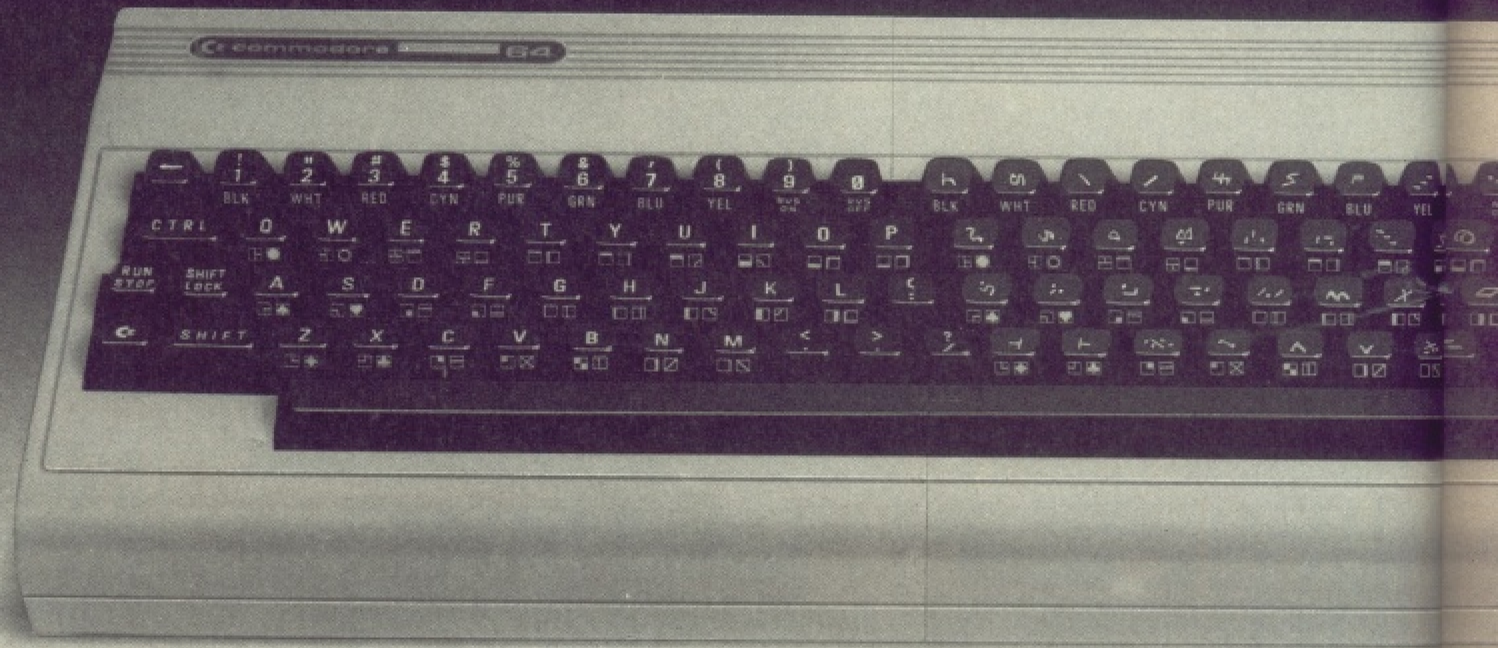
Lines 900-930 Displays game over.

```
955 PRINT"♥♥♥♥♥♥♥♥"TAB(28)"♥PRESS FIRE■"
960 PRINTTAB(31)"♥♥FOR"
965 PRINTTAB(28)"♥NEXT LEVEL"
970 IF(PEEK(JS)AND16)<>0THEN970
972 SQ=0:CX=96:CY=210:P=50
975 IFCV=50THENCV=100:CP=194:GOTO980
976 IFCV=100THENCV=150:CP=195:GOTO980
977 IFCV=150THENCV=200:CP=196:GOTO980
978 IFCV=200THENCV=250:CP=197:GOTO980
980 POKEV+4,CX:POKEV+5,CY:GOTO315
```

Lines 950-980 Changes to next level.

```
1005 POKEAD,15:POKESR,123:POKEHI,57:POKE
LO,172:POKEW,33
1006 FORN=15TO0STEP-.15:POKEVO,N:NEXT:PO
KEW,0
1010 BL=1024+INT((CX-13)/8)+40*INT((CY-4
1)/8)
1012 IFPEEK(BL-40)<>32THENBL=BL+40
1014 IFPEEK(BL+40)<>32THENBL=BL-40
1016 IFPEEK(BL-1)<>32THENBL=BL+1
1018 IFPEEK(BL+1)<>32THENBL=BL-1
1020 POKEBL-41,160:POKEBL-40,160:POKEBL-
39,160
1030 POKEBL-1,160:POKEBL,160:POKEBL+1,16
```

The answer to your pr



That's one answer, here's a more practical one –

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Much as we all love the Commodore 64 for playing games or running our business software on, when it comes down to the nitty gritty of learning more about the computer and doing some programming, there is much room for improvement.

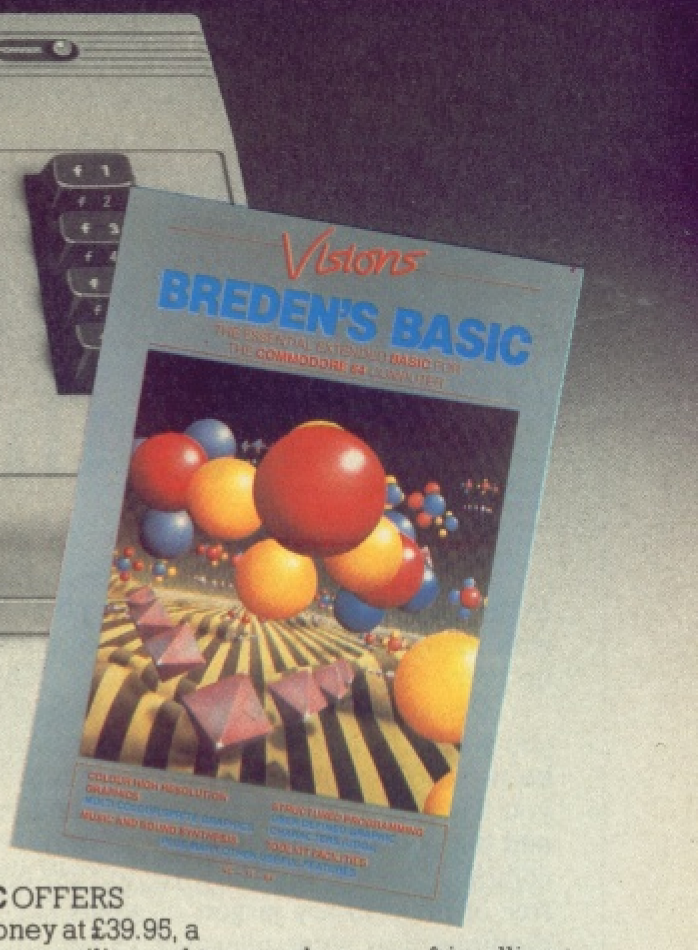
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KEYBOARD KAPERS

```
0
1040 POKEBL+39,160:POKEBL+40,160:POKEBL+
41,160
1050 POKEBL-41+C,4:POKEBL-40+C,4:POKEBL-
39+C,4
1060 POKEBL-1+C,4:POKEBL+C,4:POKEBL+1+C,
4
1070 POKEBL+39+C,4:POKEBL+40+C,4:POKEBL+
41+C,4
1075 SQ=SQ+1
1080 RETURN
```

Lines 1000-1080 Plays the notes and fills the square 1.

```
1110 PRINT"[illegible]"TAB(28)"[illegible]HIGH "HS
1120 PRINTTAB(28)"[illegible]SCORE"SC
1130 PRINTTAB(28)"[illegible]COINS"CN"[illegible] "
1140 RETURN
```

Lines 1100-1140 Displays the score and so on.

```
5001 DATA0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,24,0,0,24,0,0,24,0,0,24,0,1,255,128,1
5002 DATA255,128,0,24,0,0,24,0,0,24,0,0,
24,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

Lines 5000-5002 Sights the data.

```
5101 DATA0,0,0,0,0,0,0,0,0,0,126,0,1,255
,128,3,255,192,7,255,224
5102 DATA6,24,96,14,251,112,14,27,112,15
,219,112,15,219,112,6,24,96,7,255,224
5103 DATA3,255,192,1,255,128,0,126,0,0,0
,0,0,0,0,0,0,0,0,0,0
```

Lines 5100-5103 Coin data level 1.

```
5201 DATA0,0,0,0,0,0,0,126,0,1,255,128,7
,255,224,7,255,224,15,255,240
5202 DATA12,132,48,30,181,184,30,181,184
,30,181,184,30,181,184,14,132,48
5203 DATA15,255,240,7,255,224,7,255,224,
1,255,128,0,126,0,0,0,0,0,0,0,0,0,0
```

Lines 5200-5203 Coin data level 2.

```
5301 DATA0,0,0,0,60,0,1,255,128,7,255,22
4,15,255,240,15,255,240,31,255,248
5302 DATA28,132,56,62,189,188,62,133,188
,62,245,188,62,245,188,30,132,56
5303 DATA31,255,248,15,255,240,15,255,24
0,7,255,224,1,255,128,0,60,0,0,0,0,0,0,0
```

Lines 5300-5303 Coin data level 3.

```
5401 DATA0,60,0,1,255,128,7,255,224,15,2
55,240,31,255,248,31,255,248,63,255,252
5402 DATA56,66,28,123,90,222,127,90,222,
120,90,222,123,218,222,56,66,28,63,255
5403 DATA252,31,255,248,31,255,248,15,25
5,240,7,255,224,1,255,128,0,60,0,0,0,0
```

Lines 5400-5403 Coin data level 4.

```
5501 DATA0,60,0,1,255,128,7,255,224,31,2
55,248,31,255,248,63,255,252,127,255,254
5502 DATA120,66,30,251,94,223,255,66,223
,248,122,223,251,250,223,248,66,31
5503 DATA127,255,254,127,255,254,63,255,
252,31,255,248,31,255,248,7,255,224
5504 DATA1,255,128,0,60,0
```

Lines 5500-5504 Coin data level 5.

YOUR 64 *MISELLANEAD*

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- 64 CBM + cass. deck + Simon's Basic + joystick + books. Any offers considered. Please write to G. Roberts, 28 Sainfoin Road, London SW17 8EP.
- VIC 20 as new. Unused present. £60. 32K RAM Pack £30. Also Intro to Basic parts 1 and 2 £10 each. Manchester 061 485 2860
- Adman speech synthesiser for CBM 64, only two months old. New equipment forces sale, £25 no offers. Phone South Ockendon 855757. Buyer collects.
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- Potty Pigeon, Beach Head, Arabian Nights, Daley's Decathlon, Twin Kingdom Valley to swap. Write to: Andrew Houston, 10, Howburn Place, Aberdeen AB1 2XX. Phone 0224 582164 after 6.
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- Help wanted. CBM 64 programs, radio related, for use in S.W.L's station. CW/RTTY etc. Any program that can be used in station. Will pay for copy or trade for other good programs. Radio Log, file, whatever, disk if possible please. PO Box 48, Findern, Derby.
- Word processor for CBM 64. Must be cheap and easy to use. Phone Mackenzie (0302) 744727 evenings (disk preferred).
- The name of a software company that deals with A-level physics or A-level chemistry or maths or a person with these to sell. Write to John Peacock, 16 Eaton Road, Maghull, Merseyside. L31 5JU.

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- I would like to join a Commodore 64 users' club within 5 miles of Stretford, Manchester. If there is such a club pleace contact Gary Knowles, 50 Norway Street, Stretford Manchester.
- Independent Commodore Products Users Group No. RG114, meets 1st Friday of every month at Bury House, Bury Road, Gosport, Hants at 7.30pm sharp. New members welcomed.

MESSAGES

- N. Ireland user seeks 64 user club near Belfast or even better Banbridge. Graeme Galway, 13, Tullyear Ave., Newry Rd., Banbridge, County Down BT32 3PR.

ADVERTISEMENT INDEX

TALKIN' 64

Listen to any group of adventure fans, and the phrase MUD is likely to feature prominently in the conversation. A multi-user adventure game running on a mainframe computer, 64 users are some of the few people currently able to play the game. Phil Z Manchester *asked one of MUD's authors to explain.*

Coming up with a new idea for a computer game may not be a passport to the Millionaire's Club — but it can at least take you part of the way. The tired and slightly battered microcomputer software industry has spent much of this year waiting for the 'Next Big Thing' — with little sign of its arrival.

Until now, possibly. Though the software business is not the place to find it. The computer science department at Essex University, is. Amongst the artificial intelligence systems, natural language research projects and computer based training systems, there is a hot little item called Mud. Mud stands for Multi-User Dungeons and dragons, and is a flash version of the Hobbit or Valhalla — a role playing adventure game. What's this got to do with 64 users? Quite simply that you are part of a privileged minority of computer users actually able to play it.

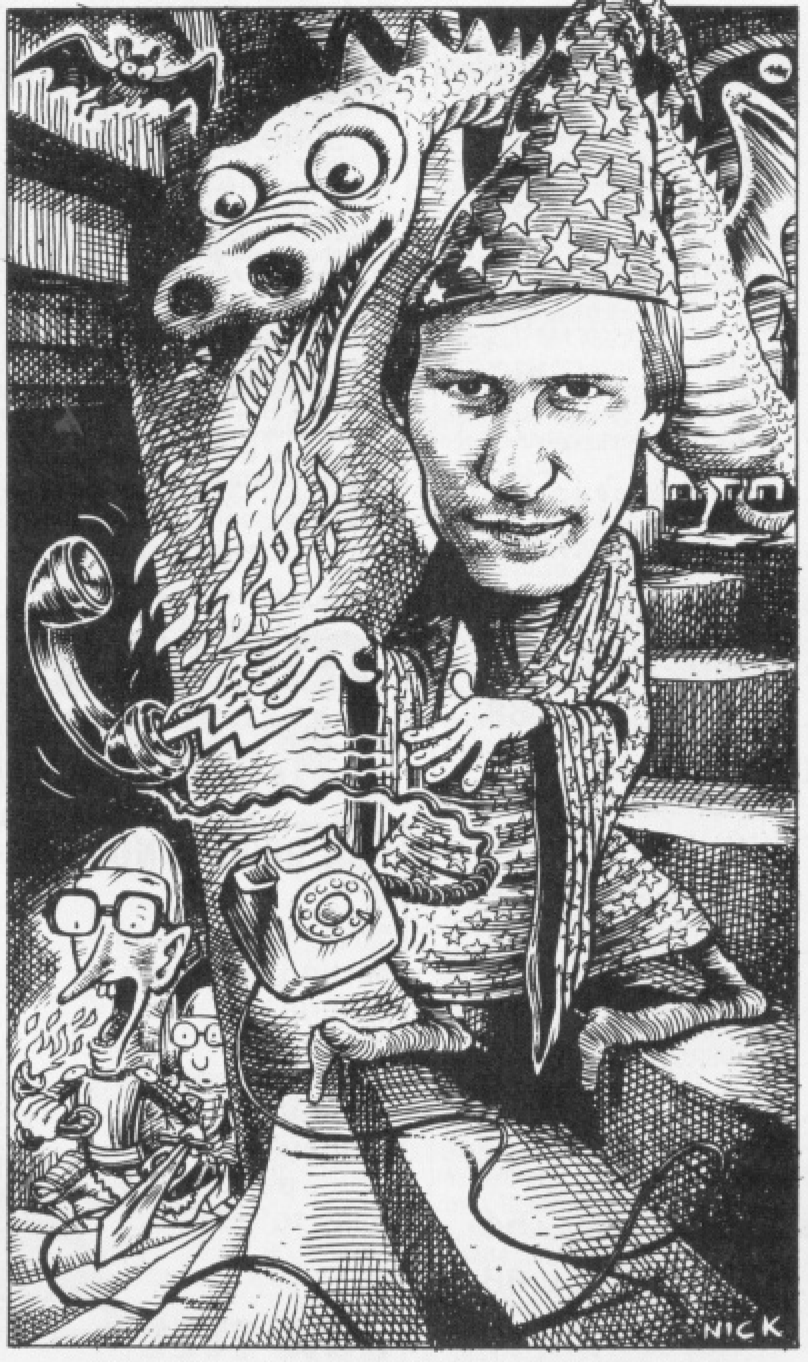
Mud is a major feature of the newly inaugurated Compunet service for 64 users. The only other Mud players around at the moment are those able to dial up the game running on Essex University's DEC system — an expensive business.

"The connection costs are the main barrier to getting more people playing Mud," commented Richard 'The Arch Wizard' Bartle, co-author of the game.

So what's it all about?

As the name suggests, Mud is a multi-player version of the adventure game Dungeons and Dragons. But once you get your teeth into it, it's far more — combining the fascination of an adventure game with the spontaneity of on-line chatting as you meet other players in the game.

Mud also offers a much more sophisticated 'dungeon' than anything available on a micro at present. The program runs on a giant DEC System 10 super minicomputer and, according to Bartle, can handle as many as 40 players at once. "That is probably the limit with the game at its present size, but we can always make it bigger", Bartle observed. Like Valhalla and Hobbit, the game consists of a series of rooms in which



Richard 'The Wiz' Bartle instils weird and wonderful powers in your telephone

NICK DAVIES

treasure may or may not be hidden. Commands are fed through the network to the game and you can move about inside the dungeon in much the same way you might in any adventure game.

Where it comes into its own, however, is in its ability to allow players to talk to each other, form alliances, exchange items of treasure and, if you happen to be lucky, learn the secrets of the dungeon from other players.

The background to Mud is Essex University's extensive artificial intelligence research — the university is ranked second only to Edinburgh in the field. Bartle is involved in a project to look at artificial intelligence systems as applied to planning projects. "I was taken on at Essex under the University Grants Commission scheme to provide information technology lectures", said Bartle. But despite this academic background, Bartle is not slow to see the market for Mud. The commercial rights to the game have been grabbed by Century Publishing, the computer book publishers and through them the deal with Compunet has been negotiated.

The problem is, for the time being anyway, Mud playing is going to be expensive. Compunet is charging a £5 per month entry fee and the enormous sum of £3 per hour to play Mud on Compunet. This is probably cheaper than going through PSS to get to the Essex University machine, but with the telephone charges as well, it is still going to be a costly business.

"We are considering rewriting the Mud system next year if we can get the finance to do it. This might make it more widely available" said Bartle.

When this happens, Mud is likely to become a big seller — mainly because it is so addictive (ask the editor of Your 64 — he's a regular player).

One player in Wales became so obsessed with Mud that she played from midnight till dawn every night.

"When she received a £3000 phone bill for eight months, she had to stop," exclaimed Bartle.

So, if you join Compunet and are looking for a wholly different experience, it might be worth joining for a month to see what it's like.

According to Nick Green at Compunet, its version should be up and running by the time this hits the book stalls. Members just select it as an option through Compunet, when they will be transported through a gateway into the wonderful world of Mud. Green explained that the appropriate software to access Mud is stored at the main computer end and is loaded into your Commodore modem.

For the technically minded it is a teletype emulator. Other microcomputer users will have to wait until someone else puts up an appropriate service — doesn't that make you feel smug?

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